KT-400

Ethernet Four-Door Controller



Installation Manual

KANTECH™

DN1726-0811

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Pre-Installation Information

To the Installer: If you are familiar with the installation, you can use the installation checklist on page 37 with the ☐ symbol.

Copyright Information

Safety Instructions

Important: NEVER INSTALL THE EQUIPMENT DURING A LIGHTNING STORM!

This equipment, KT-400 Ethernet Four-Door Controller, shall be used installed and used within an environment that provides the pollution degree max 2 and over voltages category II NON HAZARDOUS LOCATIONS, INDOOR only. The equipment is FIXED and PERMANENTLY CONNECTED and is designed to be installed by Service Persons only; [service person is defined as a person having the appropriate technical training and experience necessary to be aware of hazards to which that person may be exposed in performing a task and of measures to minimize the risks to that person or other persons.] The equipment is installed in a metallic cabinet that meets the applicable requirements for a FIRE ENCLOSURE.

1. The **connection to the mains supply** must be made as per the local authorities rules and regulations: In the UK as per BS6701. An appropriate disconnect device must be provided as part of the building installation. Where it is not possible to rely on the identification of the NEUTRAL in the AC MAINS SUPPLY, the disconnecting device must disconnect both poles simultaneously (LINE and NEUTRAL).

2. AVOID **setting up** the equipment near heaters, air conditioners, ventilators, and/or refrigerators;
DO NOT select a place that exposes your controller to direct sunlight, excessive heat, moisture, vapors, chemicals or dust.

3. If **during the installation** a knockout on the cabinet is removed, it is the installer's responsibility to ensure that the same degree of protection for the cabinet is provided by the use of bushings, fittings, adequate sealant, etc.

4. The metallic **cabinet must be secured to the building structure before** operation. Use four (4) stainless steel tapping screws #8, 32 mm (1.25 in) to mount the cabinet.

5. The **ground connection** must be as shown within the included diagram, or equivalent.

6. **Internal wiring** must be routed in a manner that prevents:

- Excessive strain on wire and on terminal connections;
- Loosening of terminal; connections;
- Damage of conductor insulation.

7. It is the end-user and/or installer's responsibility to ensure that the disposal of the used batteries is made according to the waste recovery and recycling regulations applicable to the intended market.

8. There are **no serviceable parts within the equipment**; For any issues regarding the equipment please contact your installer.

9. **DISCONNECT POWER BEFORE SERVICING**.

Technical Support

For technical assistance with the KT-400 Ethernet Four-Door Controller and other Kantech products, contact technical support, Monday to Friday. See the following table for the technical support phone numbers.

Country/Region	Phone Numbers	Support Hours	Email
North America Toll Free +888 222 1560 (GMT -05:00)			
US and Canada	Direct: +450 444 2030 Fax: +450 444 2029	8:00 to 20:00	kantechsupport@tycoint.com
Latin America (GMT -03:00)			
Argentina	Direct: +5411 4717 2929 Direct: +5411 4717 1320 Direct: +5411 4717 5525 Fax: +5411 4717 1060	9:00 to 18:00	ingenieria@tycoint.com
Asia (GMT +08:00)			
Singapore	Direct: +65 6319 9820 Fax: +65 6319 9821 Direct: +65 6389 8297 Fax: +65 6389 8292	8:30 to 18:00	swhuin@tycoint.com wtooh@tycoint.com
Europe Toll Free +800 CALL TYCO / +800 2255 8926 (GMT +01:00)			
Bahrain	+800 04127	8:00 to 18:00	tfsemea.support@tycoint.com
France	+33 04 72 79 14 83		
Greece	+00 800 31 22 94 53		
Russia	+8 10 800 2052 1031		
Spain	+900 10 19 45		
Turkey	+00 800 31 92 30 37		
United Arab Emirates	+800 0 31 0 7123		
United Kingdom	+44 08701 ADT SUP / 44 08701 238 787 Direct: +31 475 352 722 Fax: +31 475 352 725		

Compliance Specifications

FCC & IC Compliance

This device complies with Part 15 of the FCC rules Class A. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation. This class A digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. The KT-400 Ethernet Four-Door Controller is also compliant with EN55022:1998, amendment 1:1995, Class A.

UL Compliance

To comply with UL listings, the following requirements must be met:

- Use of a UL listed computer
- Use of UL listed readers (Wiegand 26 and 34 bits, mag stripe 26 and 34 bits, XSF 39 bits have been tested and found to comply)
- Use of a UL recognized tamper switch on every housing cabinet for the KT-400 Ethernet Four-Door Controller
- Do not use the SmartLink option
- Do not use a 240 VAC transformer (not UL listed)
- Use only UL listed cables
- Use only UL listed adaptors
- Use only a UL listed transformer **Hammond BF2F** such as Kantech part number **TR1675** (Available through Kantech distributors or dealers, please refer to the Technical Support contact information **on page 2** to obtain the specific transformer)

Note: All circuits are power limited.

UL 294 Compliance Notice

- **IP Connectivity:** Only for supplementary use when planning to install the KT-400 Ethernet Four-Door Controller with a UL 294 access control system.
- Use only UL 294 or UL 1076 listed power supply
- Connect Kantech part number **KT-ACPW-LED** status indicator to the **16 VAC** black terminals of the KT-400
- Use Kantech part number **KT-BATT-12** battery, see ***Note***.

Note: Backup battery provides operation of up to 12 hours but has been tested for 4 hours per Section 33 of UL 294, fifth edition.

UL 1076 Compliance Notice

- The KT-400 is UL 1076 Listed as a Commercial Proprietary Control Unit Accessory and Proprietary Burglar Alarm Unit (Section 83.2), with EntraPass and Redundant Server, alarm system features, KT-300 Controllers, ioProx Proximity readers, and TRex request to exit devices – other sensor devices (temperature, water level, etc.) may be used as long as they are also UL 1076 Listed.
- The EntraPass and Redundant Server shall be running at all time, and manned 24 hours a day, 365 days a year – The EntraPass and Redundant Server will each have their own operator workstation.
- Data processing equipment and office appliance and business equipment used as central supervisory equipment station shall be listed to Information Technology Equipment - UL 60950.
- Should the EntraPass and/or Redundant Server be replaced, a UL 60950 listed computer must be used.
- The following recommended system requirements apply to the EntraPass Server, Redundant Server, Video Vault, Card Gateway, SmartLink, and Workstation:
  - Operating Systems: Windows® 2000/XP/2003 Standard and Enterprise Server Editions/Vista
  - Processor: Pentium IV at 1.8 GHz

- 1 GB RAM
- Minimum free hard disk space: 20 GB
- Color depth: 24-bit (16 million colors), required for Video Integration only
- Screen resolution: 1024 x 768
- Graphic adapter card: 32 MB
- 48X CD-ROM drive
- Network Interface card: 10/100 Base-T network adaptor

Note: Actual requirements may vary based on your operating system and configuration.

- The Central Supervisory Equipment shall employ supply line transient protection complying with the Standard for Transient Voltage Surge Suppressors, UL 1449, with a maximum marked rating of 330 V.
- The Central Supervisory Equipment shall employ signal line Transient protection complying with the Standard for Protectors for Data Communications and Fire Alarm Circuits, UL 497B, with a maximum marked rating of 50 V.
- The Central Supervisory Equipment shall employ that communication circuits and network components connected to the telecommunications network shall be protected by secondary protectors for communication circuits. These protectors shall comply with the Standard for Secondary Protectors for Communications Circuits, UL 497A. These protectors shall be used only in the protected site of the telecommunications network.
- The Central Supervisory Equipment shall be installed in a temperature controlled environment. A temperature controlled environment is defined as one that can be maintained between 13° - 35°C (55° - 95°F) by HVAC system. Twenty-four hours on standby power shall be provided for the HVAC system. The standby power system for the HVAC system may be supplied by an engine driven generator alone. A standby battery is not required to be used.
- A marking to identify the application and signaling function of the product is located on the inside of the unit (inner door sticker).
- For certified commercial proprietary control unit accessory applications, the requirements of UL 1076, Commercial Proprietary Control Unit Accessory also apply.
- Use Kantech part number **KT-3LED-PLATE** 3-color LED indicators mounted on single plate when the KT-400 is configured with the (APOU/ALVY) KT-NCC in an EntraPass Global Edition system for remote alarm monitoring. Refer to the *KT-NCC Installation Manual*, DN1611 for additional details.
- The reader(s), that is(are) designated to arm or disarm the alarm system, must be within the secured side of the customer premises.
- The following Kantech readers have been validated by UL for the UL 1076 Standard: P225W26, P225KPW26, P225XSF, P225KPXSF, P325W26, P325KPW26, P325XSF, P325KPXSF and P600.

Note: All readers can be ordered with or without the following suffixes: BEI, BEI-SE, GRY or GRY-SE.

- The KT-400 Ethernet Four-Door Controller is UL 1076 listed when used with the (APOU/ALVY) KT-NCC (Network Communications Controller).
- All alarms shall be reported and acknowledged in the following priority:

Note: To set these priorities, please adjust the Event Parameters, found in EntraPass System

1. Fire alarm and industrial supervision where a risk of injury to persons, or damage or destruction of property may be involved
2. Hold-up or panic alarm
3. Burglar alarm
4. Watchman tour (Guard tour)
5. Fire-alarm supervision
6. Burglar-alarm supervision
7. Industrial supervision where a risk of injury to persons, or damage or destruction of property will not be involved.

Overview

The KT-400 Ethernet Four-Door Controller is designed to meet the highest standards of access control and point monitoring applications. Here are the features of the KT-400 Ethernet Four-Door Controller.

Compatible with all EntraPass Special, Corporate and Global Editions

The KT-400 Ethernet Four-Door Controller is compatible with all EntraPass Editions v4.01 and higher:

- EntraPass Special Edition
- EntraPass Corporate Edition with a Corporate Gateway
- EntraPass Global Edition with a Corporate Gateway
- EntraPass Global Edition with a Global Gateway
- EntraPass Global Edition with a KT-NCC Network Communications Controller

Multiple Configuration Options

- **EntraPass:** The KT-400 Ethernet Four-Door Controller can be configured with all EntraPass Editions v4.01 and higher.
- **Web Configuration Page:** The Web Configuration Page is accessible through any browser. It can be used to verify and configure the IP settings of the following Kantech devices: the KT-400 Ethernet Four-Door Controller, the KT-NCC and the Kantech IP Link. Refer to the procedure “Configuring the KT-400 Ethernet Four-Door Controller with the Web Configuration Page” on page 32 for further details.
- **KT-Finder:** The KT-Finder is a stand-alone application that can be used to verify and configure the IP settings of the following Kantech devices: the KT-400 Ethernet Four-Door Controller, the KT-NCC and the Kantech IP Link. The Kantech device can be located within the same LAN or in a remote location over the internet. Refer to the procedure “Configuring the KT-400 Ethernet Four-Door Controller with the KT-Finder” on page 33 for further details.

Four Onboard doors

The KT-400 Ethernet Four-Door Controller is a full 4 onboard doors access controller. See **Figure 1** for a description of the PCB and **Figure 2** for all the connection possibilities offered by the KT-400 Ethernet Four-Door Controller.

Communication Ports

- 1 10/100Base-T Ethernet for network connection with the EntraPass Gateway
- 1 RS-232 (COM3) for direct connection to the EntraPass Gateway and RS-485 communication with KT-100, KT-200, KT-300 and KT-400
- 1 RS-485 (COM1) for RS-485 communication between the EntraPass Gateway and the KT-100, KT-200, KT-300 and KT-400
- 1 SPI (Serial Peripheral Interface) port for expansion modules such as the KT-MOD-REL8 (8-Relay Outputs), the KT-MOD-INP16 (16-Input) and the KT-MOD-OUT16 (16-Output)

IP Connectivity

The KT-400 Ethernet Four-Door Controller, when used with EntraPass Special Edition or a Corporate Gateway, can report events, gather its configuration through an IP connection over the LAN (Local Area Network) and over the Internet for a WAN (Wide Area Network). In this mode, the 1st or local controller becomes a “Master Controller” and can poll up to 31 Kantech controller(s). The KT-400 Ethernet Four-Door Controller is compatible with all the controllers. Unlike the other controllers, the KT-400 Ethernet Four-Door Controller asynchronously polls the controllers (KT-100, KT-200, KT-300) and communicates with the EntraPass Gateway only when necessary. This significantly reduces the amount of bandwidth required to operate your security system on the network.

- **AES Encryption 128-Bit:** The KT-400 Ethernet Four-Door Controller is extremely secure. It uses 128-bit AES encryption to communicate with the Gateway which prevents any hacking from the internet and ensures secure communications when used over the internet on a wide area network (WAN).

Inputs

There are 16 onboard inputs on the KT-400 Ethernet Four-Door Controller. Up to 240 more can be added through the addition of expansion modules, such as the KT-MOD-INP16, for a total of 256 inputs. Each input can be individually configured for one of the following application:

- Door contact (4 onboard)
- T.Rex (Request to Exit Detector) (4 onboard)
- Interlock (4 onboard)
- Floor Selection for Elevator Application
- Elevator Action
- External Alarm System Status (Armed / Disarmed)
- External Alarm System Alarm (Alarm / Secure)
- External Alarm System Zones
- Relays to trigger on each input in alarm event
- Zone shunt: Single or group of zones can be permanently or temporarily 'shunted' to a secure state on the same controller. Shunt method includes:
    - Zone Shunt by another Zone - When a zone in alarm is programmed to shunt another zone / group of zones.
    - Zone Shunt on Unlock - When a zone is temporarily frozen to its actual state (alarm or secured) after an access granted.
    - Manual Shunt - Operator can manually 'Shunt' a zone to a secure state.
    - Disarmed Door Shunt - When alarm system is disarmed, some zones may be 'Shunted' to a secure state.
    - Entry / Exit Delay Shunt - When a user is in the process of disarming / arming the alarm system and entry / exit delay prevails, some zones may be 'Shunted' to a secure state.
- Arming / Disarming Request
- Postpone Arming Request
- Tamper switch input: The tamper switch is a non-programmable 'Fixed-Function' input. It is used to identify tampering of the KT-400 cabinet.

Lock Outputs

There are 4 onboard lock outputs and they are supervised. The locking function can also be performed by any onboard relay configured for this functionality.

Relay Outputs

There are 4 onboard relay outputs. Up to 256 relay outputs can be supported through the addition of expansion modules such as the KT-MOD-REL8.

Reader Outputs

There are 4 different possible outputs for each of the 4 onboard reader interfaces for a total of 16 programmable outputs. Reader outputs are used to give user visual and/or audible feedback on the ongoing access events.

Reader Interfaces

There are 4 onboard reader interfaces. They can be programmed for Wiegand or ABA (Clock and Data) readers.

Elevator Interface

The KT-400 Ethernet Four-Door Controller supports elevator interfacing with the addition of expansion modules such as the KT-MOD-REL8, KT-MOD-INP16 and KT-MOD-OUT16.

Alarm Panel Interface

The KT-400 Ethernet Four-Door Controller supports alarm panel interfacing with the appropriate connections made between zone inputs, relay outputs and the alarm system panel.

Automatic Port Detection

The KT-400 Ethernet Four-Door Controller automatically detects the site communication speed set by EntraPass as well as the communication port which can be IP (ETHERNET #1), RS-485 (COM1) or RS-232 (COM3).

Downloadable Firmware

The firmware program can be downloaded from any EntraPass workstation to the KT-400 Ethernet Four-Door Controller. The firmware program, stored in the controller’s flash memory, is upgraded without having to change any parts.

Trouble and Reporting

The KT-400 Ethernet Four-Door Controller constantly supervises ac power and battery condition and reports “AC Lost”, “Normal Battery”, “Low Battery”, “Battery Critical” or “No Battery”, status to the EntraPass system. Power outputs are supervised and electronically protected against short-circuits and surges. Locking devices are also supervised for short and open circuits.

Visual Status Indicators (LEDs)

The KT-400 Ethernet Four-Door Controller has multiple status indicators such as for troubleshooting, network activity, power status and outputs activity. See **Figure 1** for their locations.

- **VITAL or Heartbeat:** The VITAL blue LED indicates the communication status with EntraPass or the IP mode of the controller. Refer to **Table 1** for a descriptions of the heartbeat patterns.
- **SPI Active (YELLOW)**: This LED signals activity on the SPI expansion port as well as communication between the main CPU and the input/output CPU.
- **COM1-RX, COM1-TX, COM2-RX, COM2-TX, RS232-RX and RS232-TX (YELLOW):** The six serial port LEDs are transmit/receive activity indicators. The **COM2-RX** and **COM2-TX LEDs** are for future use.
- **LOCK1, LOCK2, LOCK3 and LOCK4 (RED)**: Each lock output (Open Drain) has an indicator which turns on each time the corresponding output is activated.
- **RELAY1, RELAY2, RELAY3 and RELAY4 (RED)**: Each relay output has an indicator which turns on each time the corresponding relay is activated.
- **AC PWR and DC PWR (GREEN):** Theses LEDs are on when AC and DC power are present at the AC and/or DC power input terminals.
- **ETH1 LINK (GREEN):** The LED is OFF when there is no Ethernet network or the cable is disconnected, and ON when there is an Ethernet cable and network connection.
- **ETH1 TXRX (YELLOW):** The LED indicates network activity.

Built-in SPI Expansion

The KT-400 Ethernet Four-Door Controller allows connection of expansion modules in order to add outputs, like relays and open drain outputs, and inputs. See **Figure 10** and **Figure 11** for an example with expansion modules.

- **KT-MOD-REL8:** The KT-MOD-REL8 is an 8-relay expansion module. Each relay is 3 Amps, 30 VDC Form C. The module supports daisy-chaining which can add up to 32 KT-MOD-REL8 modules for a total of 256 relay outputs per KT-400 Ethernet Four-Door Controller.
- **KT-MOD-INP16:** The KT-MOD-INP16 is a 16-zone input expansion module. The module supports daisy-chaining which can add up to 15 KT-MOD-INP16 for a total of 240 external inputs per KT-400 Ethernet Four-Door Controller. The KT-400 Ethernet Four-Door Controller has 16 onboard inputs which gives a total of 256 inputs per controller.
- **KT-MOD-OUT16:** The KT-MOD-OUT16 is a 16-output expansion module. Each output is capable of 750 mA. It gives the opportunity to address the need for external LED, lock, relay, piezo and buzzer control. The module supports daisy-chaining which can add up to 16 KT-MOD-OUT16 modules for a total of 256 external open drain outputs per KT-400 Ethernet Four-Door Controller.

Note: The expansion modules support daisy chaining which can add up to 32 KT-MOD-REL8 modules for a total of 256 external relays per KT-400 Ethernet Four-Door Controller. Combining input and output expansion modules gives the flexibility to connect up to 256 inputs and 256 outputs.

Figure 1: KT-400 Ethernet Four-Door Controller PCB View

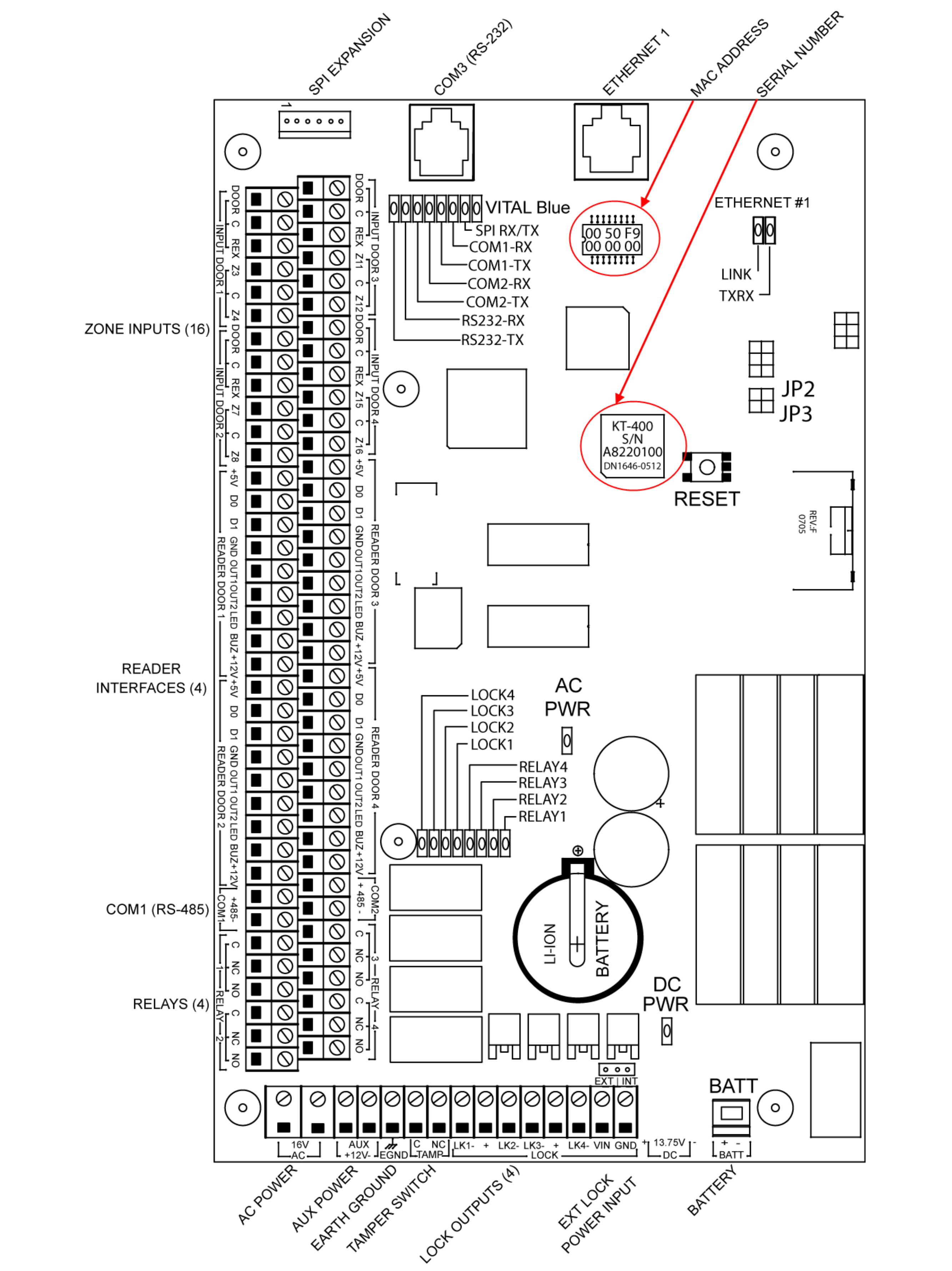


Figure 2: KT-400 Ethernet Four-Door Controller Inputs and Outputs View

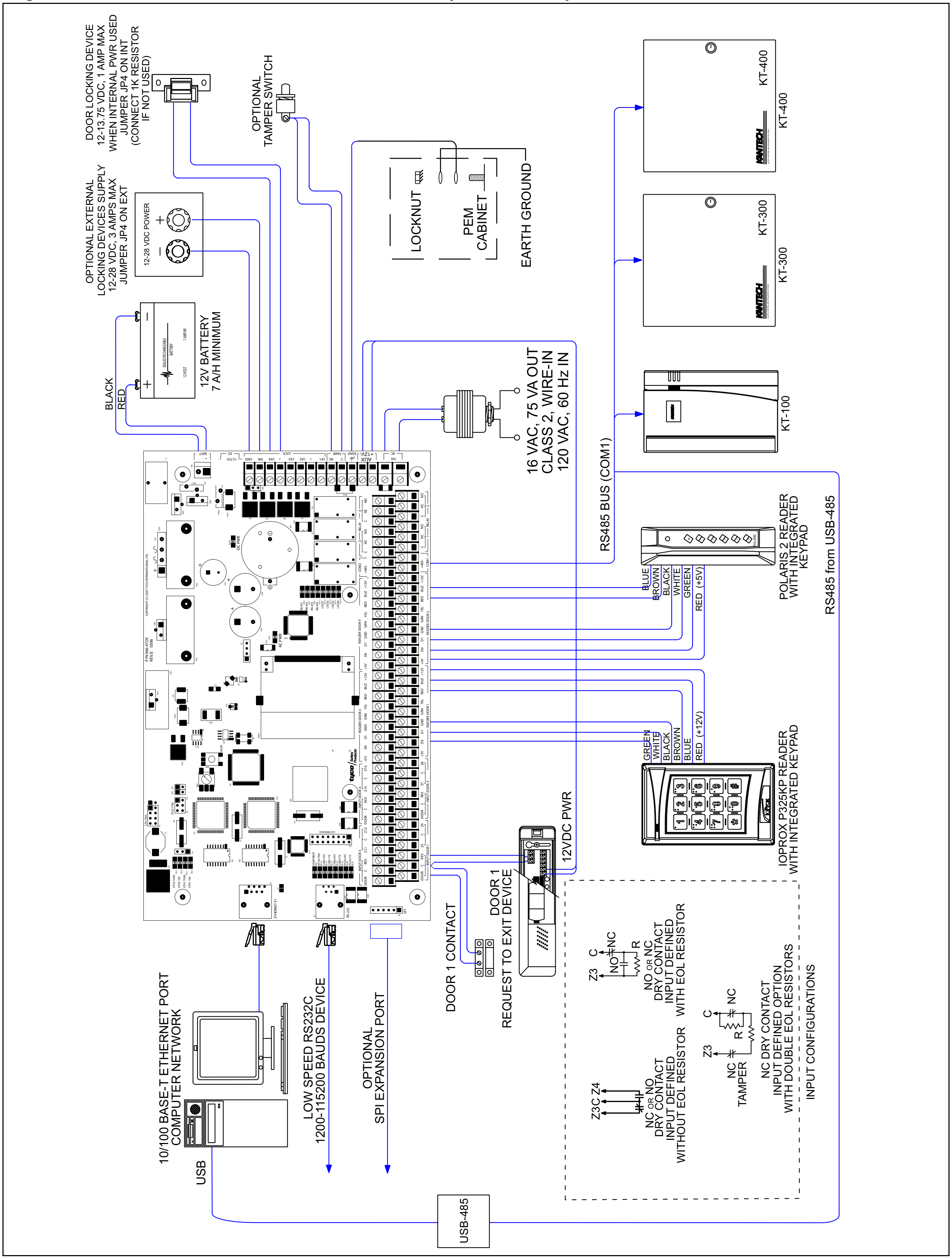
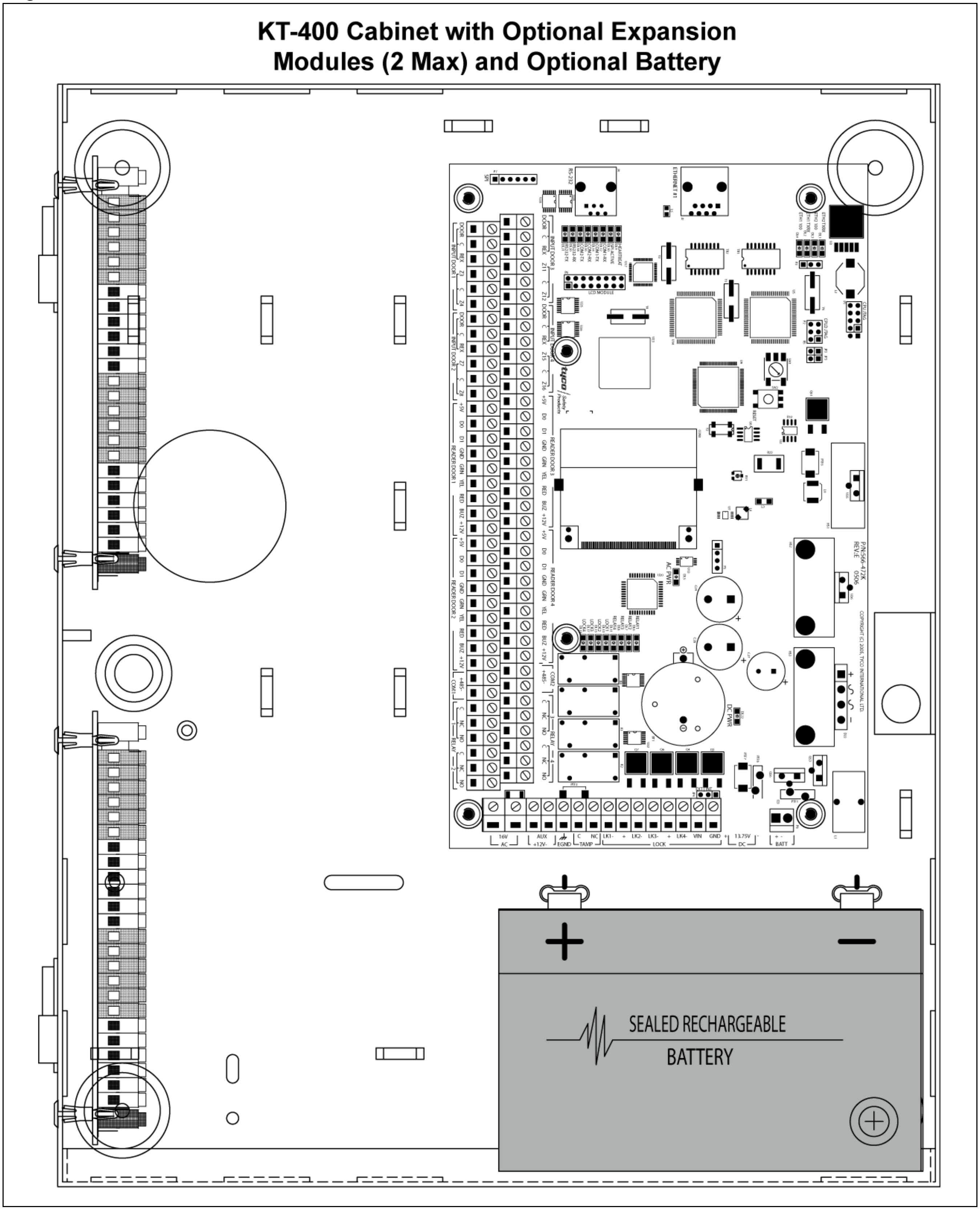


Figure 3: KT-400 Cabinet Model for North America



System Architecture

The KT-400 Ethernet Four-Door Controller can be used through various site applications with EntraPass Special Edition, EntraPass Corporate Edition and EntraPass Global Edition.

Applications with EntraPass Special Edition and Corporate Edition with Corporate Gateway.

- Over the internet. See **Figure 4**.
- Over RS-232 with a USB-485. See **Figure 5**.

Application with EntraPass Global Edition and a Global Gateway.

- Over RS-232 with a VC-485. See **Figure 6**.

Application with EntraPass Global Edition and a KT-NCC.

- Over the internet with a KT-NCC. See **Figure 7**.

Application with EntraPass Special Edition, Corporate Edition and Global Edition.

- Over RS-232 straight from EntraPass RS-232 COM port. See **Figure 8**.

Figure 4: Over the Internet with EntraPass Special Edition and Corporate Edition with Corporate Gateway

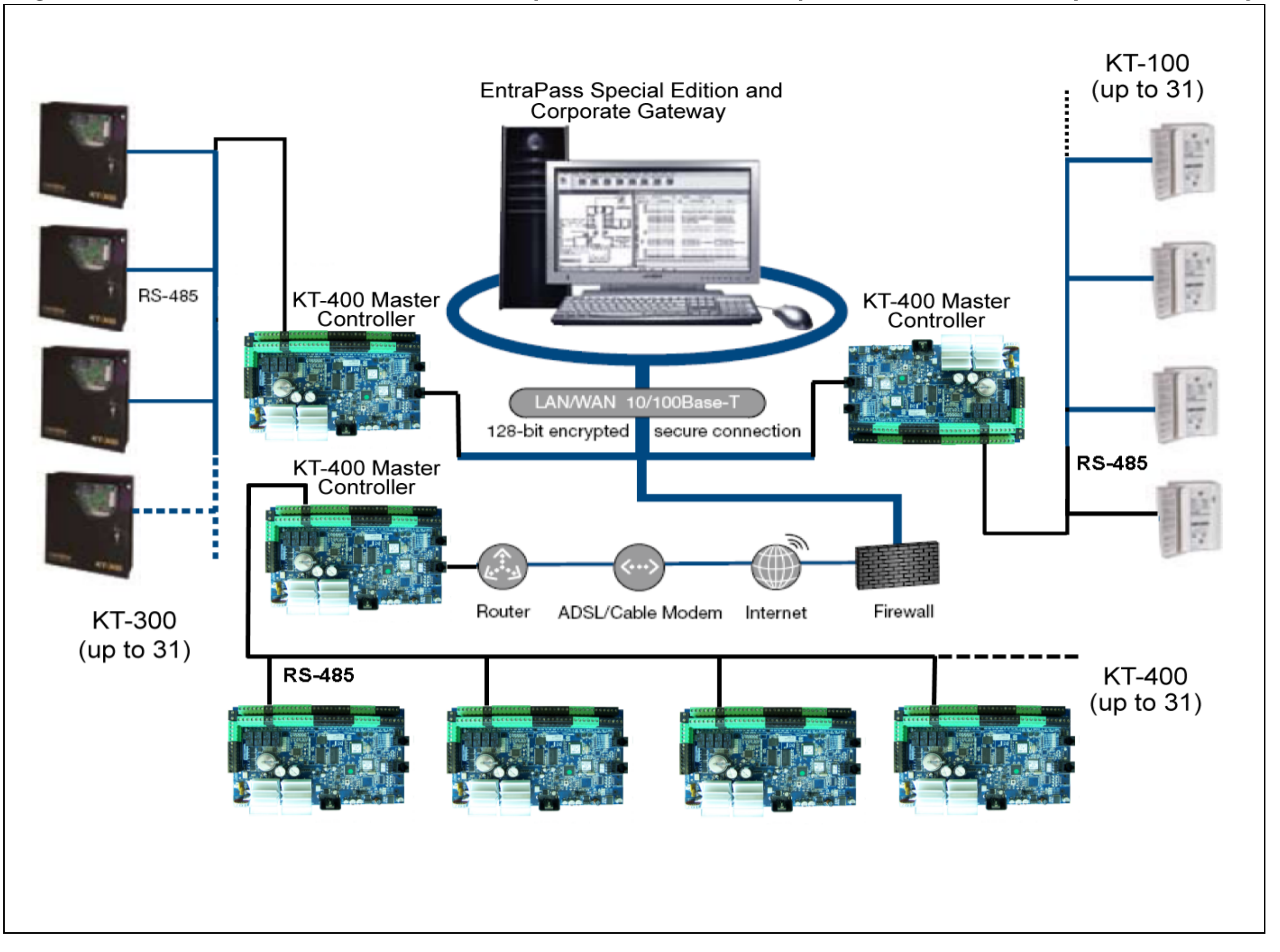


Figure 5: USB-485 with EntraPass Special Edition and Corporate Edition with Corporate Gateway

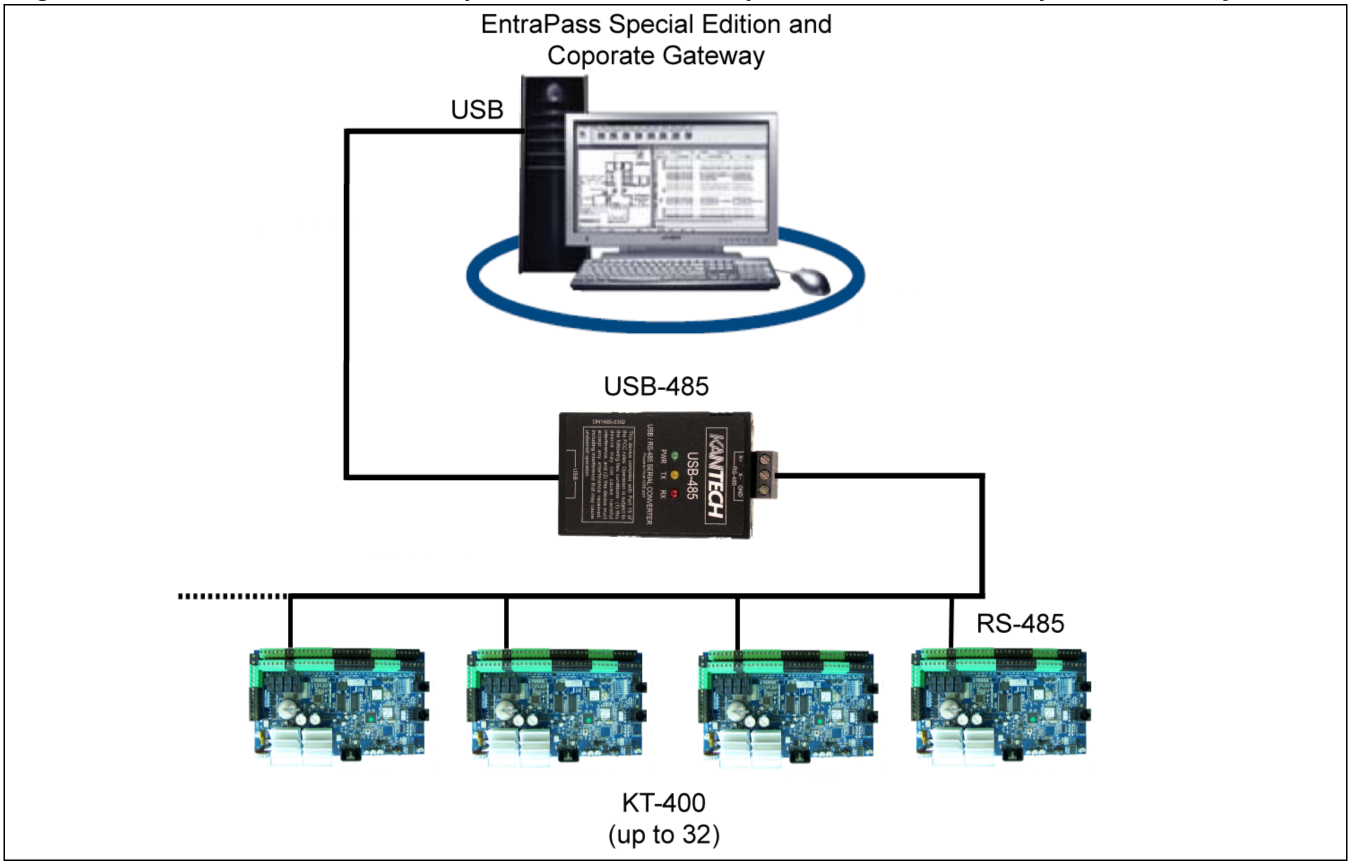


Figure 6: VC-485 with EntraPass Global Edition and Global or Corporate Gateway

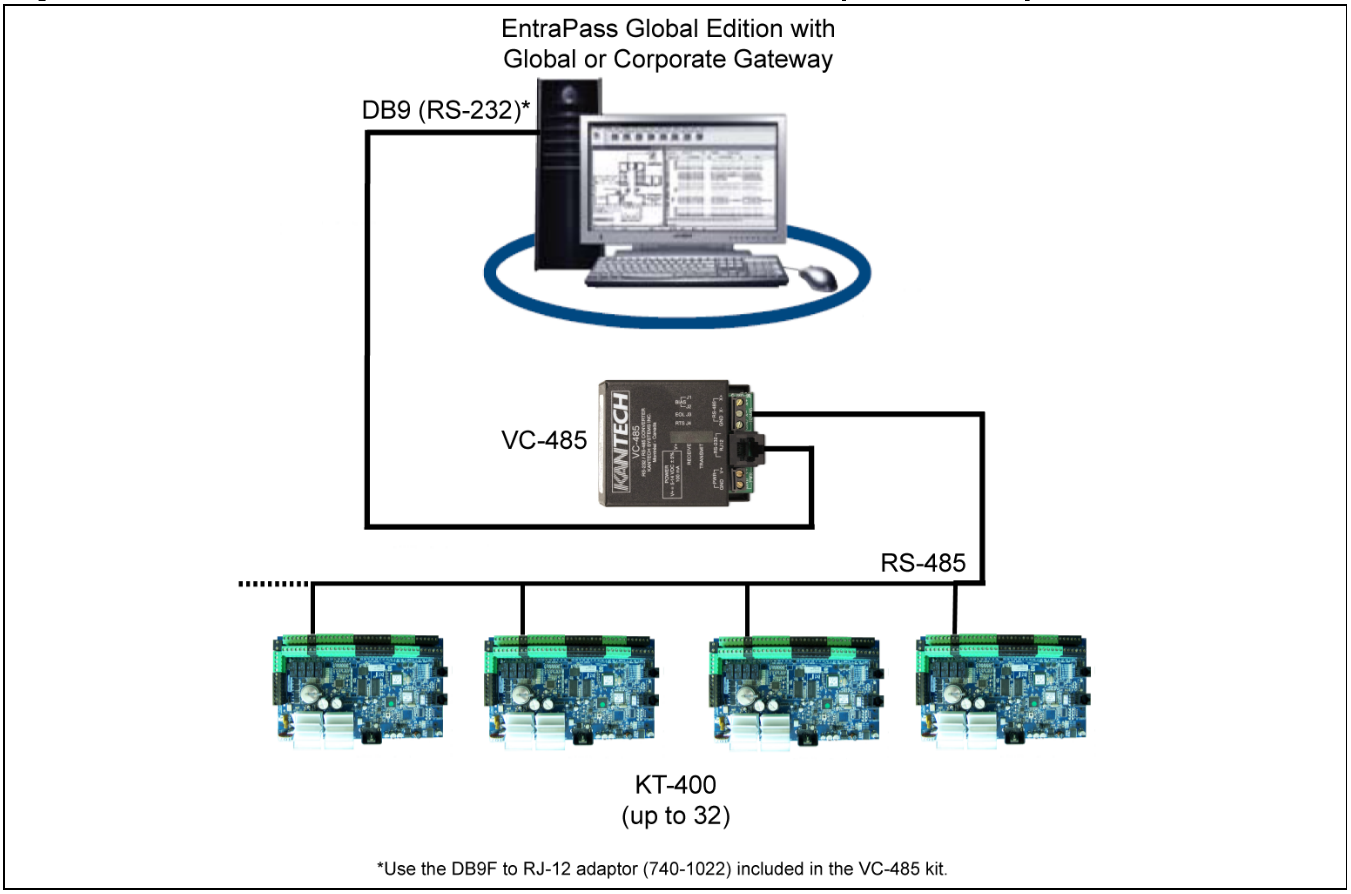


Figure 7: Over the internet with a KT-NCC and EntraPass Global Edition

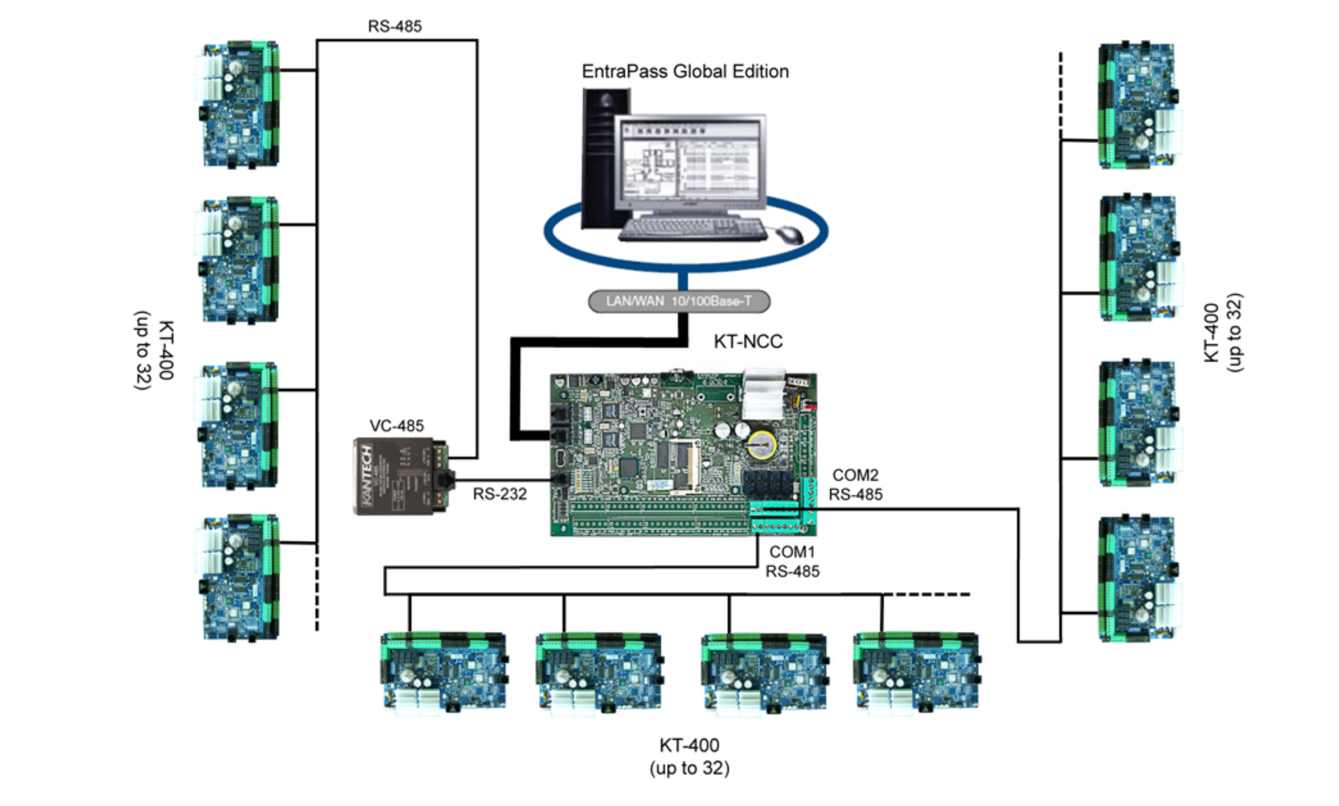
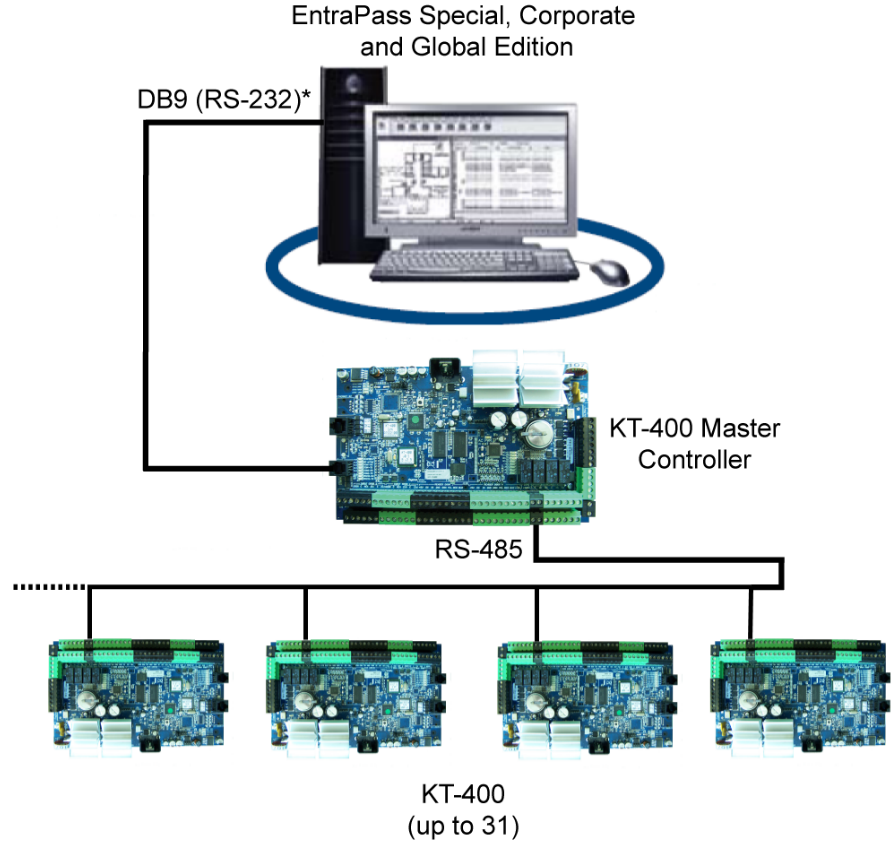


Figure 8: Over RS-232 straight from the EntraPass RS-232 COM port

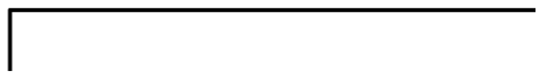
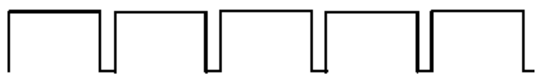
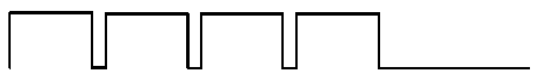
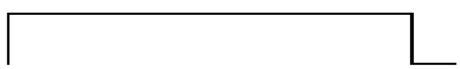
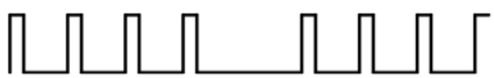
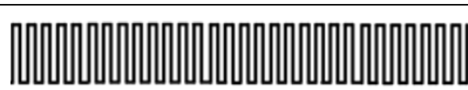


*Use the DB9F to RJ-12 adaptor (740-1023) included in the CBLK-10 kit.
The maximum length for the RS-232 cable is 30 m (100 ft).

VITAL LED Heartbeat Patterns

Communication status and other vital controller parameters can be obtained from VITAL LED heartbeat patterns. It is located near the RS-232 port (COM3), see **Figure 1**. This information is particularly useful when connecting the controller to the rest of the EntraPass system. The following table lists all conditions along with a brief description. Refer to **Table 3**, if you must reset or change the communication mode of the KT-400 Ethernet Four-Door Controller.

Table 1: VITAL LED Heartbeat Patterns

Booting Up		**Steady**
Factory Default DHCP		**Continuous LONG Pulses**
Unable to Resolve DNS		**2 LONG Pulses**
Forced Default Static		**3 LONG Pulses**
DHCP Server Failed		**4 LONG Pulses**
Receive Broadcast		**Single 2.5 Sec. Burst**
Card Read or Swipe		**Single 0.5 sec burst, resume previous flash**
Hard Reset		**4 SHORT Pulses**
Corporate Gateway		**3 SHORT Pulses**
Global Gateway		**1 SHORT Pulse**
Fail Soft		**Continuous SHORT Pulses**
Firmware Update		**5 pulses / sec @ 50% duty cycle**
Rebooting		**10 pulses / sec @ 50% duty cycle**

Technical Specifications

Type	Description
Power input (**KT-400**)	Transformer class 2, IN 120 VAC; OUT 16 VAC, 75 VA
Battery back-up (**KT-BATT-12**)	12 VDC, 7 Ah battery supervised, provides up to 12 hours of operation
Operating Temperatures	From 2°C to 49°C (35°F to 120°F) indoor use only
Humidity Level	0 to 85% (relative humidity non-condensing).
Cabinet Dimensions (High-Wide-Deep)	37.59 cm (14.8 in) x 30.48 cm (12.0 in) x 12.57 cm (4.95 in)
Cabinet Weight (**KT-400**)	4.0 kg (8.82 lb)
PCB dimension	22.86 cm (9 in) X 13.97 cm (5.5 in) X 5.20 cm (2.04 in)
Reader types	Wiegand, proximity, ABA Clock and Data, bar code, magnetic, integrated keypad, smartcard and others
Reader power output	12 VDC and 5 VDC @ 175 mA max each, protected and supervised
Monitored points (inputs)	16 monitored points, single EOL (End of Line), double EOL, without EOL and 1 fixed-function tamper switch input
Points maximum wiring	AWG #22 - 600 m (2,000 ft)
Door strike power	12 VDC, 250 mA max for KT-400 supervised
Reader outputs	16 outputs, 25mA max each, open collector outputs
Auxiliary outputs	LEDs (LED, OUT1 and OUT2) and buzzer (Buz) for each individual door, 25mA max each, open collector outputs
Relay controlled output	4 onboard Form C Relay controlled outputs, 30 VDC, 3 Amps max each
Communication ports	1 x RS-232 with RJ-12, 1 x RS-485, 1 x Ethernet 10/100Base-T with RJ-45
Expansion port	1 x SPI 6-pin connector, bidirectional data exchange supported. Supplies 12 VDC, 500 mA max shared with 12 VDC Auxiliary port
Auxiliary port	1 x Auxiliary 12 VDC, 500 mA maximum shared with SPI expansion port
Communication speed	- Up to 115200 Bauds (automatic detection) over RS-232 and RS-485 - 10/100 Mb/s BaseT over Ethernet
Flash memory	16 MB for application storage
RAM memory	64 MB for application loading and running, protected by a Lithium-Ion battery for a minimum of 75 hours
Network autonomy	Distributed data and processing
Certifications / Listing	EN55022, EN61000-6-1, EN61000-6-2 FCC: Class A UL 294, UL 1076

Electrical Specifications

OPEN COLLECTOR OUTPUTS	MAXIMUM CURRENT (Typical)	COMBINED MAXIMUM CURRENT
LEDs (LED, OUT1 and OUT2) for each door reader	25 mA (each)	2 Amps for KT-400
Buzzer (Buz) for each door reader	25 mA (each)	
OUTPUTS	**MAXIMUM CURRENT**	
1 for 12 VDC Auxiliary Power (11.2 to 13.75 VDC) polyswitch protected, shared with SPI expansion port	500 mA	
4 for Controlled Readers (11.2 to 13.75 VDC)	500 mA	
4 for Controlled Readers 5 VDC	400 mA	
4 for Locks (11.2 to 13.75 VDC) when jumper JP4 is on **INT** (internal)	1 Amp for KT-400	
4 for Locks (11.2 to 28 VDC) when jumper JP4 is on **EXT** (external)	3 Amp	

KT-400 Ethernet Four-Door Controller Models, Expansion Modules Models, Related Documentation and Miscellaneous Items

Part number	Description
KT-400 Ethernet Four-Door Controller Models	
KT-400	KT-400 Ethernet Four-Door Controller, IP Ready with Accessory Kit in Metal Cabinet, see **Table 2**
KT-400-PCB	KT-400 Ethernet Four-Door Controller PCB only, IP Ready with Accessory Kit, see **Table 2**
KT-400-CAB	KT-400 Black Metal Cabinet with Lock and Keys, see **Table 2**
Expansion Modules Models	
KT-MOD-INP16	KT-400 Expansion Module 16-Zone Inputs with SPI Cable 41 cm (16 in)
KT-MOD-REL8	KT-400 Expansion Module 8-Relay with SPI Cable 41 cm (16 in)
KT-MOD-OUT16	KT-400 Expansion Module 16-Output with SPI Cable 41 cm (16 in)
KT-MOD-CAB	KT-400 Expansion Module Cabinet, Black, with SPI Cable 91 cm (36 in), Lock and Two Keys
KT-MOD-SPI16	KT-400 SPI Cable 41 cm (16 in) for SPI Interconnection **within the** Cabinet
KT-MOD-SPI36	KT-400 SPI Cable 91 cm (36 in) for SPI Interconnection **between** Cabinets
Related Documentation	
DN1420	EntraPass Special Edition, *Reference Manual* - English version
DN1415	EntraPass Corporate Edition, *Reference Manual* - English version
DN1316	EntraPass Global Edition, *Reference Manual* - English version
DN1474	EntraPass Special Edition, *Reference Manual* - French version
DN1435	EntraPass Corporate Edition, *Reference Manual* - French version
DN1289	EntraPass Global Edition, *Reference Manual* - French version

Part number	Description
DN1475	EntraPass Special Edition, *Reference Manual* - Spanish version
DN1436	EntraPass Corporate Edition, *Reference Manual* - Spanish version
DN1599	EntraPass Global Edition, *Reference Manual* - Spanish version
DN1514	EntraPass Special Edition, *Reference Manual* - German version
DN1598	EntraPass Corporate Edition, *Reference Manual* - German version
DN1597	EntraPass Global Edition, *Reference Manual* - German version
DN1684	EntraPass Special Edition, *Reference Manual* - Italian version
DN1683	EntraPass Corporate Edition, *Reference Manual* - Italian version
DN1682	EntraPass Global Edition, *Reference Manual* - Italian version
DN1796	Networking Basics, *Application Note*, English version
Dimensions Drawings	
DN1846	KT-400-PCB Dimensions Drawing in DWG Format
DN1847	KT-400-PCB Dimensions Drawing in PDF Format
DN1848	KT-400-CAB Dimensions Drawing in DWG Format
DN1849	KT-400-CAB Dimensions Drawing in PDF Format
Miscellaneous Items	
CBLK-10	Cable kit, RS-232 cable 30 m (100 ft) with RJ-12 connectors for PC to master KT-400, 740-1023 (DB9F to RJ-12) adaptor and 740-1041 (DB9M to DB25F) adaptor
USB-485	USB-485 interface, USB cable 0.9 m (3 ft) and USB drivers on CD-ROM
VC-485	VC-485 interface, RS-232 cable 3 m (10 ft) with RJ-12 connectors, 740-1012 (DB25F to RJ-12) adaptor, 740-1022 (DB9F to RJ-12) adaptor and 740-1033 (DB25M to RJ-12) adaptor
KT-3LED-PLATE	Three-color LED alarm indicator mounted on single plate
KT-ACPW-LED	AC power LED indicator
KT-LOCK	Keylock for cabinet with 2 keys
KT-SW1224	Internal Power Supply 12 VDC, 2 Amps, 24 Watts
KT-TAMPER	Tamper switch for cabinet

Models Information

- **KT-400**: Cabinet with one KT-400 for North America, up to three expansion modules can be installed in the cabinet,
- **KT-400-PCB**: KT-400 with parts,
- **KT-400-ACC**: Accessory kit,
- **KT-400-CAB**: Cabinet only for North America,

Table 2: Models Bills of Material

Item Description	KT-400 (*Notes 1,2*)	KT-400-PCB (*Note 2*)	KT-400-ACC	KT-400-CAB (*Note 1*)
KT-400 PCB	1	1	-	-
Cabinet	1	-	-	1
KT-400-ACC Accessory Kit	1	1	-	-
Ground wire (PCB to cabinet)	1	1	-	-
Ground wire (door to cabinet)	1	1	-	1
Tamper switch	1	-	-	-
Battery cable	1	-	-	-
Resistor 5.6K, 0.5W	-	-	32	-
Resistor 1K, 0.5W	-	-	4	-
Inner door sticker for North America, DN1762, **Figure 14**	1	-	-	1
Installation Manual DN1725 - French	1	1	-	-
Installation Manual DN1726 - English	1	1	-	-

Note 1: The **KT-400**, **KT-400-CAB** models also include the KT-LOCK.

Note 2: The **KT-400**, **KT-400-PCB** models also include screws and locknuts.

Installing the KT-400 Ethernet Four-Door Controller

Preparing to Install the KT-400 Ethernet Four-Door Controller

☐ **Required to install KT-400 Ethernet Four-Door Controller**

- For North America: AC transformer 120 VAC 60 Hz IN; 16 VAC, 75 VA OUT; class 2 (not included)
- One battery 12 VDC, 7 Ah (not included)
- Ground clamp (not included)

A visual inspection should be made when unpacking the KT-400 Ethernet Four-Door Controller. Any missing item/part or damaged component should be reported immediately.

Physical Installation

☐ **Check for ideal indoor location**

☐ **Stay away from electrical or communication devices**

The KT-400 cabinet has been designed to be mounted on a wall without any additional enclosures. The cabinet is large enough to accommodate the battery backup supply and the necessary wiring connections for most applications. EMT (Electrical Metallic Tubing) conduit knockouts are provided in 1.9 cm (0.75 in) on all sides of the cabinet.

The cabinet should be mounted indoors, in a secure location providing normal temperature and humidity, leaving 23 cm (8 in) clear space around all sides and a minimum of 33 cm (13 in) clear space in front of the cabinet. The location should be easily accessible for servicing the equipment and it is recommended that controllers be located close to the controlled doors.

Controllers must be located at a minimum distance of 2 m (6 ft) from any high voltage equipment or wiring and from electrical equipment susceptible of generating electrical interference, at a minimum distance of 1 m (3 ft) from telephone equipment or lines, and at a minimum of 8 m (25 ft) from any transmitting equipment. Physical access, using keys, on controlled doors must be provided so that the KT-400 Ethernet Four-Door Controller can easily be accessed for servicing in case of malfunction.

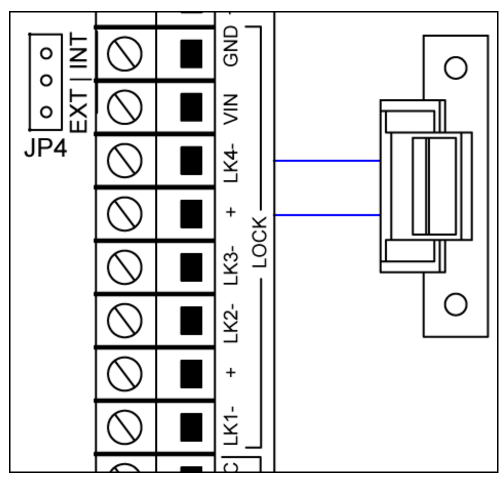
Earth Grounding

☐ **AWG #18 grounding wire to EGND**

Since the KT-400 Ethernet Four-Door Controller uses high performance communication, proper grounding must be provided to ensure proper operation.

An AWG #18 single conductor copper wire must be used to ground each controller to good earth ground as per the local electrical code (be careful with ground loops). The ground clamp should be located below any other ground.

Door Locking Devices



☐ **Connect the door lock device to + and LK1-, (+ and LK2-), (+ and LK3-) or (+ and LK4-)**

Note: If you need additional power for **ALL** the external locks, you can use an external +power supply. Connect the power supply to the **VIN** and **GND** terminals and put jumper JP4 on **EXT**.

☐ **When jumper JP4 is on INT, the total maximum current draw is 1 Amp for KT-400 at 12 to 13.75 VDC, or**

☐ **When jumper JP4 is on EXT, the total maximum current draw is 3 Amps at 12 to 28 VDC**

☐ **Check for local “magnetic lock” regulations**

LK1-, LK2-, LK3- and LK4- and + terminals are located near the battery (BATT) terminals. The locking device outputs are controlled according to the end-user programmed parameters for allowing access to or unlocking doors according to schedules and access levels. These doors locking device outputs can operate DC powered locking devices such as electromechanical strikes and can be configured to operate fail-safe or fail-secure (normal or reverse action).

Note: Use 1 K ohm EOL (End-of-Line resistor) between **+** and **LK-** terminals if not used.

Warning: Controlled door locks may be governed by regulatory bodies and should always be installed according to local regulations. In most instances, there are strict limitations to installing fail-secure devices and fail-safe locking devices such as magnetic locks or other similar locking devices on doors used as emergency exits.

Hooking Up Inputs

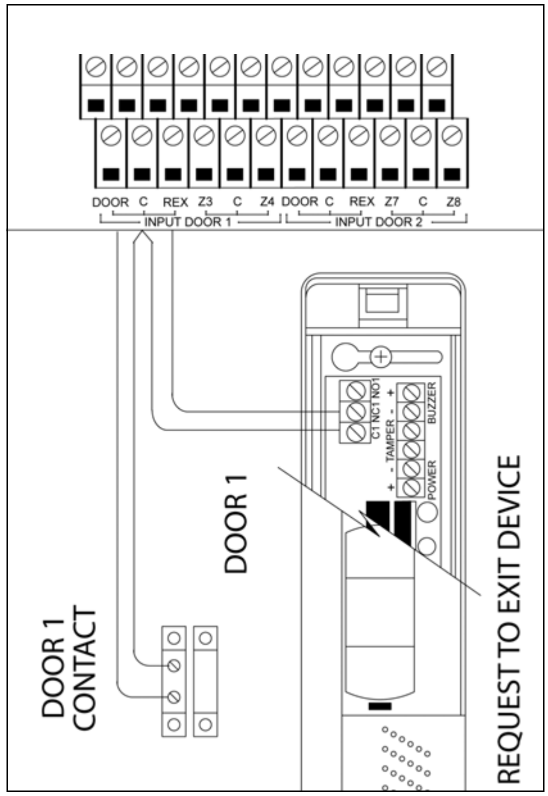
☐ **Connect devices to inputs 1 to 16**

☐ **Resistors for all inputs 5.6K ohm (if selected)**

The KT-400 has an on-board capability of monitoring 16 input points (expandable to 256 with expansion modules). Each onboard input is supervised with or without end-of-line resistors (5.6K ohm). The maximum distance of one line is 600 m (2,000 ft) with AWG #22 in a single or double EOL configuration.

Note: Onboard Inputs can be defined with: none, single or double EOL (End-of-Line) resistor(s) according to your EntraPass software settings.

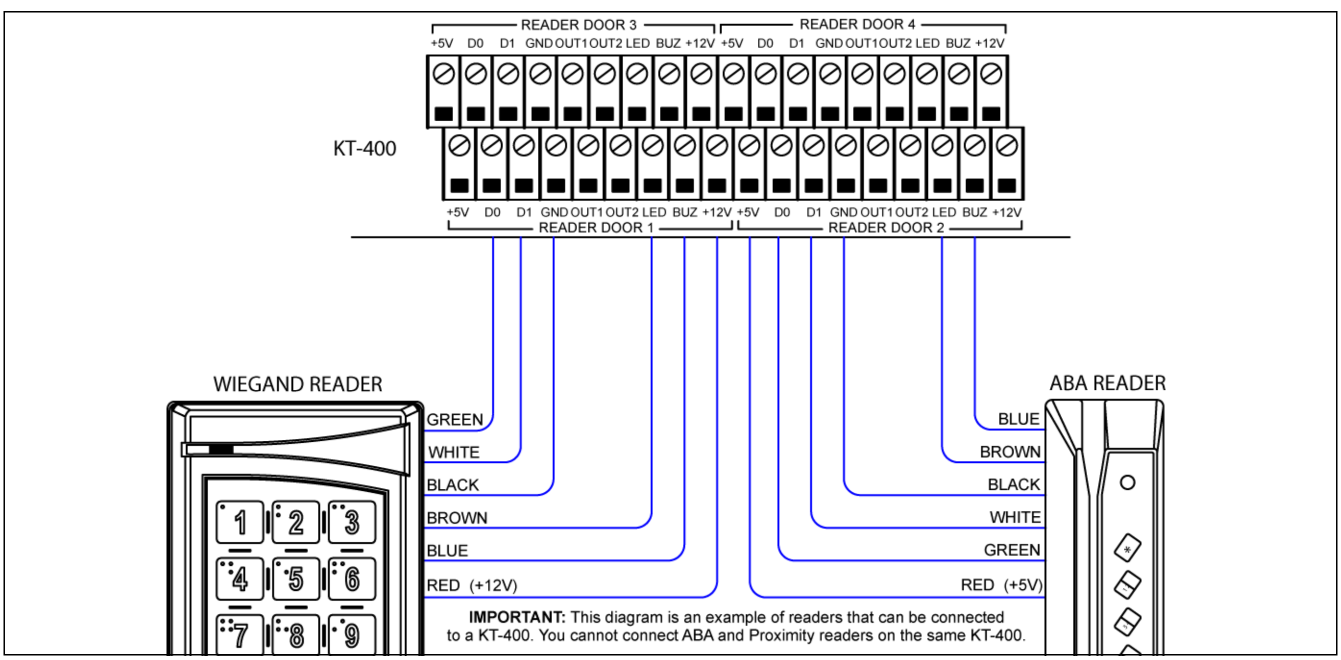
Inputs 1-2 are automatically reserved for the first controlled door. The contact is assigned input 1 and the associated request-to-exit detector as input 2. Inputs 5 and 6 are automatically reserved for the second controlled door. The contact is assigned input 5 and the associated request-to-exit detector as input 6. Inputs 9 and 10 are automatically reserved for the third controlled door. Inputs 13 and 14 are automatically reserved for the fourth controlled door. There is no obligation to follow these rules but this standard convention facilitates servicing.



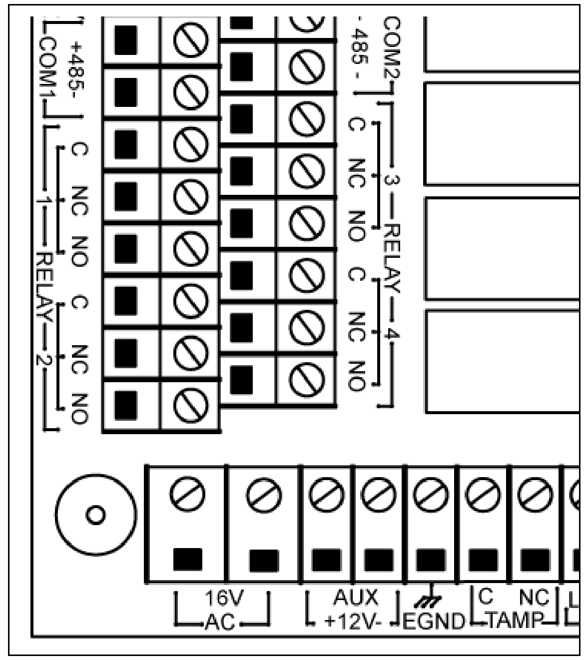
☐ **Connect readers and keypads**

READER CONNECTION TERMINAL WARNING

Connecting the red wire lead (or power lead) of a 5 VDC reader to the 12 VDC terminal may damage the reader. See your reader installation procedure for proper power connection. Up to 4 readers can be connected to a KT-400. They can be installed on one door to control both entry and exit or on four separate doors operating independently to control one-way access. The distance between the readers and the KT-400 varies by reader type (please consult the installation manual for details). Auxiliary outputs provide visual and/or audible access operation feedback at the controlled door. Outputs “READER DOOR 1 - OUT1 OUT2 LED & BUZ” are used for the first door, “READER DOOR 2 - OUT1 OUT2 LED & BUZ” are used for the second door, “READER DOOR 3 - OUT1 OUT2 LED & BUZ” are used for the third door and “READER DOOR 4 - OUT1 OUT2 LED & BUZ” are used for the fourth door.



Relay Controlled Outputs



The KT-400 provides four relay outputs RELAY1 to RELAY4 (3 Amps, 30 VAC/VDC). The KT-400 can be expanded up to 256 controlled outputs when using expansion modules.

- The KT-MOD-OUT16 module provides 16 outputs at a maximum of 750 mA per output.
- The KT-MOD-REL8 module provides 8 relay outputs at a maximum of 3 Amps per relay.

Note: Since the KT-400 maximum output current draw on the SPI expansion port is 500 mA when the **12V AUX** terminals are not used, an external power supply of 12 VDC, 2 Amps is required when adding expansion modules to the same KT-400. See **“SPI Expansion Port” on page 24** for additional details concerning the external power supply requirement for expansion modules.

Auxiliary Outputs

☐ **Connect auxiliary outputs to readers and local warning devices**

Auxiliary outputs are used for visual and audible signal. They can be activated according to input conditions or events and local alarms. Auxiliary outputs “READER DOOR 1 to 4 - LED” provide visual feedback of access operation, and auxiliary outputs “READER DOOR 1 to 4 - BUZ” can activate audible warning devices, such as T-REX or reader buzzer, to signal door alarms.

Tamper Protection

☐ **Install tamper switch on cabinet**

A tamper switch must be installed on the unit to detect unauthorized cabinet opening.

The normally closed tamper switch must be connected to the dedicated tamper input, next to the EGND.

Note: The tamper switch is required for a UL listed installation.

Connecting the KT-400 Ethernet Four-Door Controller

Connecting the VC-485 or the USB-485 to the RS-485 Bus

☐ **Connect the RS-485 cable to (COM1) + 485 - and the RS-485 signal ground to the 12 VDC AUX - (negative)**

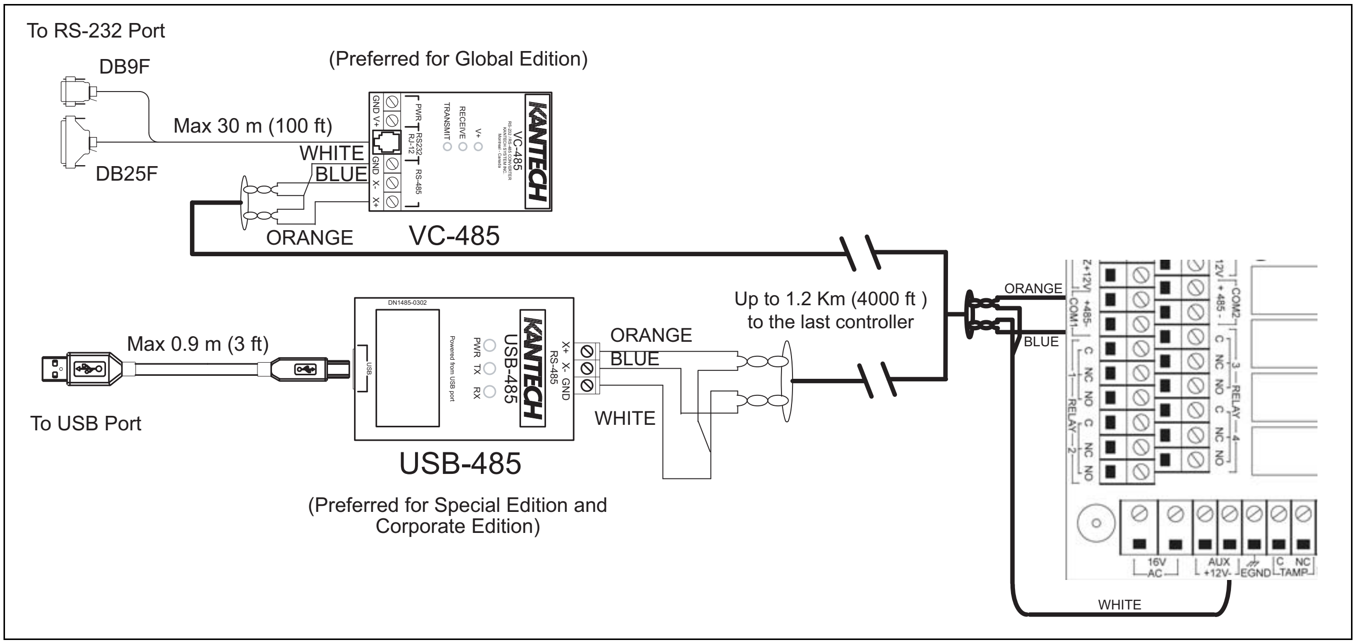
Controllers are linked together through their RS-485 terminals. The maximum communication loop length is 1.2 km (4,000 ft) using appropriate cabling. The RS-485 communication loop should be wired with Ethernet Category 3 double twisted pair network cable or better. The RS-485 loop can operate from 1200 to 115200 Bauds under normal conditions. Intermittent communication problems or erratic operation may require network speed drops to 9600 or 19200 Bauds. Varying the network speed does not perceptibly change the operation speed of the system.

Note 1: Most installations should be set to **38400** Bauds.

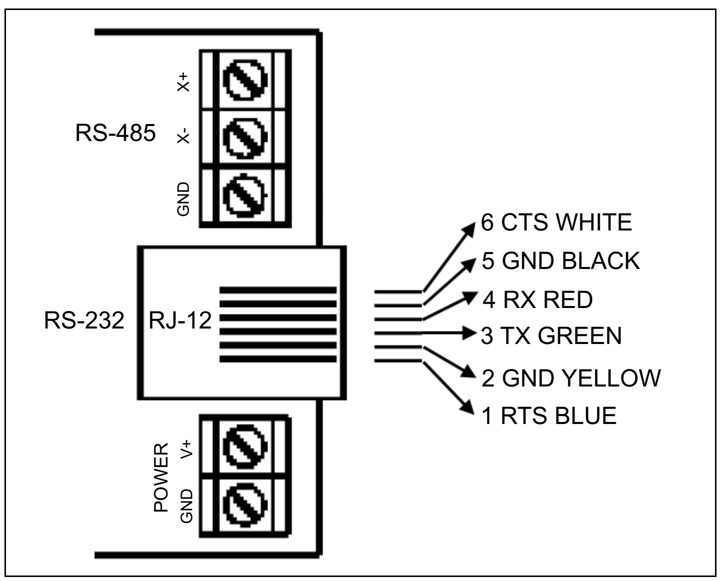
Note 2: Connecting several KT-400 at a single point is not recommended neither are splitters or spider web (star) networks.

Note 3: If the **12 VDC -** is already used, the RS-485 signal ground can be connected to the other **GND** terminals on the KT-400. The **EGND** (earth ground) terminal cant be used for signal ground, only use the **GND** and **12 VDC - (negative)** terminals for signal ground.

Note 4: There is no end-of-line resistor to install on the RS-485 COM1 terminals on the **last** KT-400 controller of a loop.



Note 5: If you must make up your own RS-232 cable with a RJ-12 connector, refer to the following diagram for the RJ-12 pin-out.



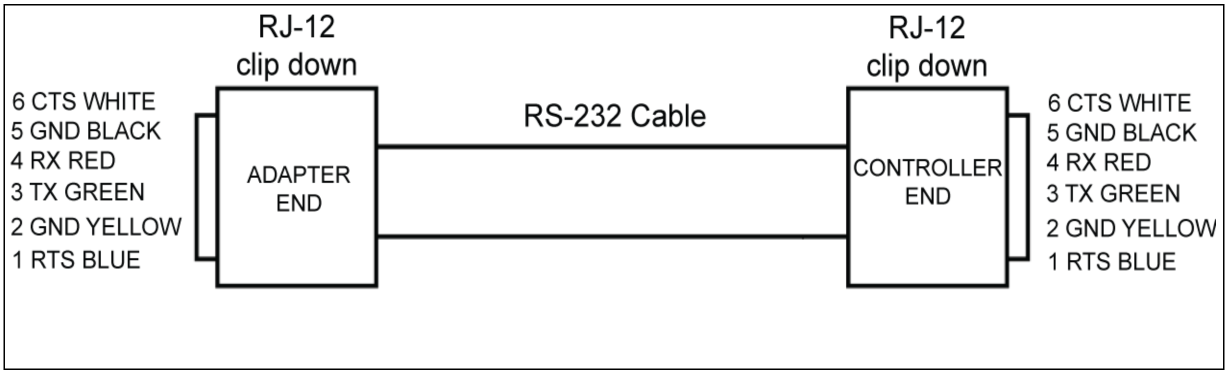
Connecting the Master Controller to the Host PC via RS-232

☐ **Connect RS-232 cable from KT-400 to the PC (maximum length 30 m (100 ft))**

If the local master controller is located more than 30 m (100 ft) from the host computer, you must use a VC-485 or USB-485 interface.

Note 1: The **CBLK-10** kit includes 30 m (100 ft) of RS-232 cable with RJ-12 connectors and the 740-1023 (DB9F to RJ-12) adaptor

Note 2: If you must make up your own RS-232 cable with RJ-12 connectors, refer to the following diagram for the RJ-12 pin-out.



Connecting over Corporate Network (LAN)

If the master controller is used in a LAN-enabled corporate setting, use the RJ-45 Ethernet port to connect the controller to the corporate network. This method uses existing wiring for data exchange between EntraPass and the controllers.

Powering the KT-400 Ethernet Four-Door Controller

☐ **Install 120 VAC IN / 16 VAC, 75 VA OUT, class 2 transformer**

☐ **Place battery in cabinet**

☐ **Power up the KT-400 Ethernet Four-Door Controller**

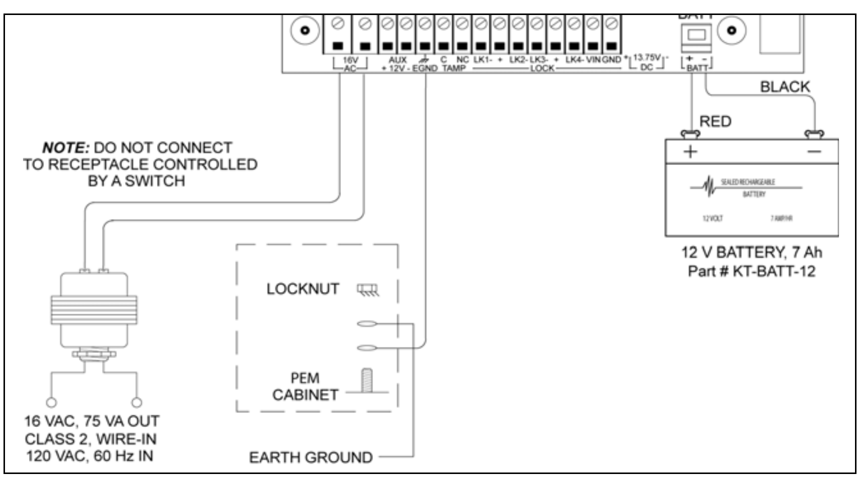
The KT-400 must be powered by a 16 VAC, 75 VA class 2 wire-in or plug-in transformer.

After you have completed all the necessary steps, you can power up the KT-400. Connect AC power and connect the battery. Once powered, check the VITAL LED status indicator to determine the status of communication and other vital parameters. Consult **Table 1** for VITAL LED behavior identifications.

If the AC supply is removed, the 12 VDC, 7 Ah backup battery will support normal operation for up to 12 hours, if fully charged. Internal battery verification will cutoff battery power if the battery voltage level falls below 9.5 Volts.

Note: The KT-400 will not start on battery power alone.

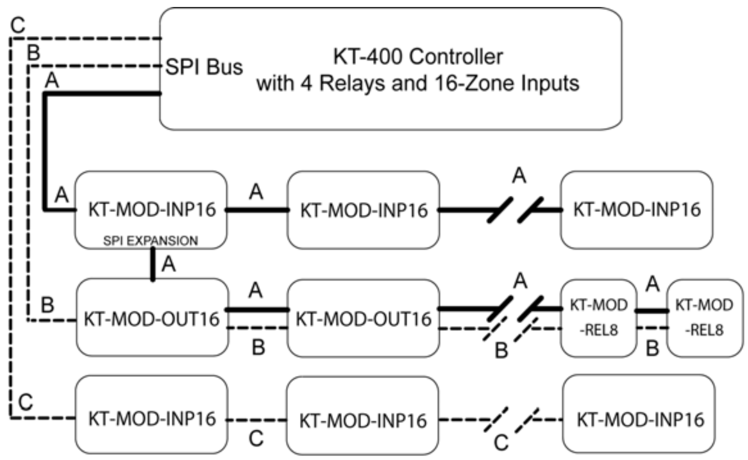
Power should only be applied to the unit when all connections are completed and tested.



SPI Expansion Port

The SPI (Serial Peripheral Interface) expansion port on the KT-400 is used to connect expansion modules, in order to add more inputs and outputs such as relays. The maximum current draw for the SPI expansion port is 500 mA when the **12V AUX** terminals are not used. The 6-pin SPI cable must be connected to the SPI IN of the first module. See **Figure 9** and **Figure 11** for examples of interconnection between the KT-400 and expansion modules.

Figure 9: KT-400 Interconnection Examples with Expansion Modules



1- Use path A when combining input (KT-MOD-INP16) and output (KT-MOD-REL8 and KT-MOD-OUT16) modules. You must use the SPI expansion port (SPI EXP) of the 1st input module to add a group of output modules.

2- Use path B when connecting ONLY OUTPUT modules (KT-MOD-REL8 and KT-MOD-OUT16).

3- Use path C when connecting ONLY INPUT modules (KT-MOD-INP16).

4- The maximum number of inputs is 256 (16 x KT-MOD-INP16).

5- The maximum number of outputs is 256 (16 x KT-MOD-OUT16), (32 x KT-MOD-REL8) or any combination giving 256 outputs.

6- Maximum current draw must be planned, use external 12 VDC, 2 Amps power supply(ies) when required.

The number of expansion modules that can be connected to the KT-400 SPI expansion port, without an additional external power supply, can vary depending how much current is drawn from all the modules in the SPI chain.

Check the following table to calculate the SPI chain current draw:

Expansion Module	Qty of modules x Maximum current draw	Total Current
KT-MOD-REL8	_______ x 330 mA	______ mA
KT-MOD-INP16	_______ x 40 mA	______ mA
KT-MOD-OUT16	_______ x 750 mA	______ mA
Maximum current draw from KT-400 SPI expansion port **when the 12 VDC AUX terminals are not used**.		- 500 mA
If the total current is between 0 mA and 1850 mA (1.85 Amps), 1 external power supply is required. If the total current is between 1851 mA and 3700 mA (3.70 Amps), 2 external power supply are required.		

Example of current draw calculation:

1. 15 modules (KT-MOD-OUT16) x 750 mA = 11250 mA
2. 11250 mA - 500 mA (or **0 mA if the 12 VDC AUX of the KT-400 is used**) = 10750 mA
3. 10750 mA divided by 1850 mA = 5.8 which means in fact 6 external power supplies 12 VDC, 2 Amps are required.
4. Connect an external power supply at every expansion module where the current draw has reached 1.85 Amps.
5. Make sure the power jumper on the modules is in the correct position when using external power supply(ies).

Important Installation Rules about Expansion Modules

Note 1: The maximum current draw **must be calculate each time** there is a new module added to the SPI chain.

Rule 2: The SPI cable, between the KT-400 and the 1st module or between each modules, cannot exceed 1 m (3 ft). Shielded wire should only be used in areas with excessive RF noise of electromagnetic interference. Keep in mind that the expansion modules must be defined in the EntraPass system when they are installed.

Rule 3: There is already 4 relays available on the KT-400 Ethernet Four-Door Controller. Don't forget to check the relays number assignments to prevent redundancy unless it has been planned on purpose.

For more details concerning the expansion modules, refer to the following documents:

Part number	Description
DN1775	KT-MOD-INP16 Install Sheet - French version
DN1776	KT-MOD-INP16 Install Sheet - English version
DN1780	KT-MOD-OUT16 Install Sheet - French version
DN1781	KT-MOD-OUT16 Install Sheet - English version
DN1785	KT-MOD-REL8 Install Sheet - French version
DN1786	KT-MOD-REL8 Install Sheet - English version
DN1805	KT-MOD-CAB Install Sheet - French version
DN1806	KT-MOD-CAB Install Sheet - English version
DN1790	Expansion Modules Dimensions Drawing in DWG format
DN1791	Expansion Modules Dimensions Drawing in PDF format
DN1792	KT-MOD-CAB Dimensions Drawing in DWG Format
DN1793	KT-MOD-CAB Dimensions Drawing in PDF Format

Figure 10: PCB View of Expansion Modules

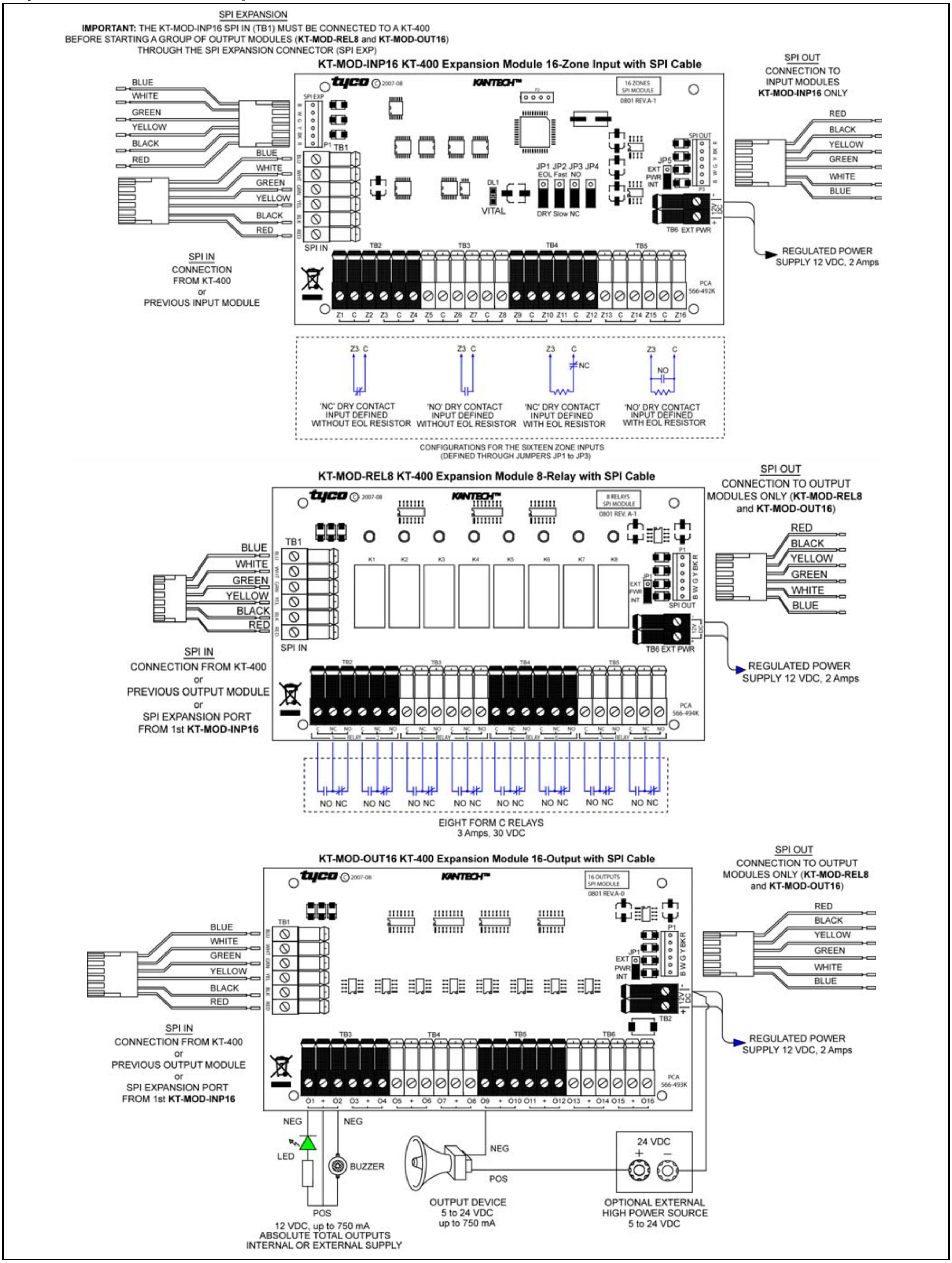


Figure 11: Example of KT-400 Ethernet Four-Door Controller Interconnection with Expansion Modules

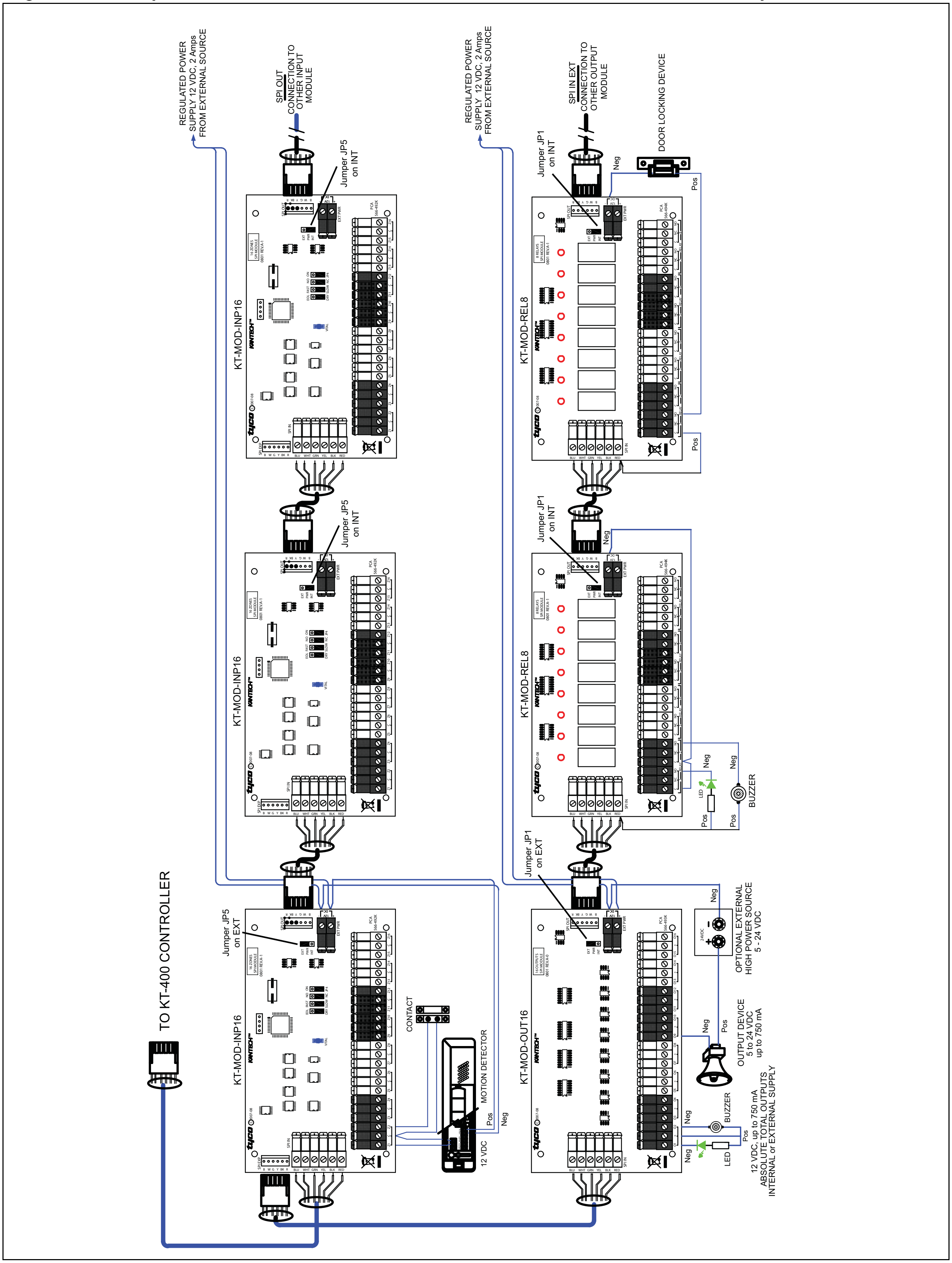
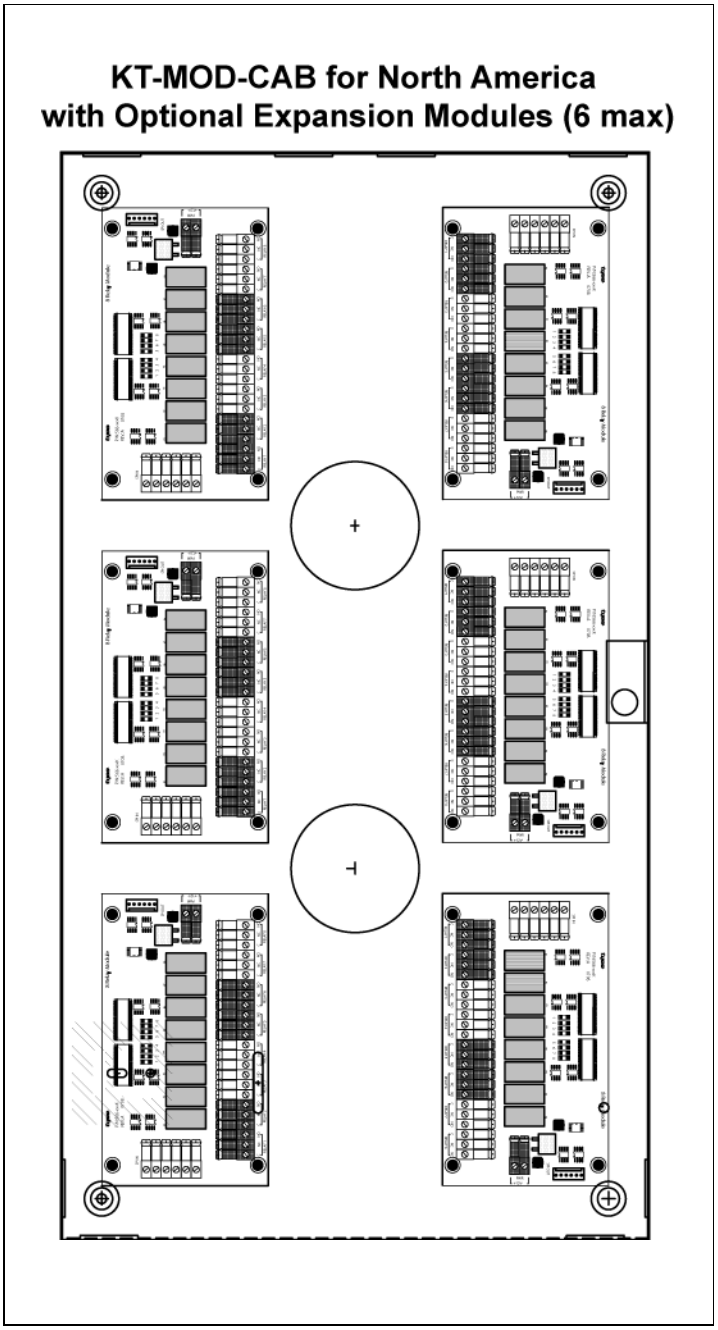
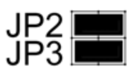
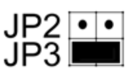
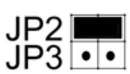
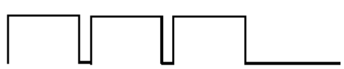
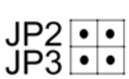
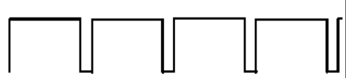


Figure 12: Expansion Modules Cabinet for North America



Troubleshooting

Table 3: Reset Types and Descriptions

Jumpers	Heartbeats	Patterns	Resets
	Continuous quick flashing		**Soft Reset:** When JP2 and JP3 are ON, the controller will reset on a) power up, b) pushbutton, or c) EntraPass software 'Manual operator soft reset': • All controller's memory definitions and parameters are verified and kept intact if still valid. • With a corporate gateway, the internal event buffer is maintained if still valid. • With a global gateway, the internal event buffer is cleared. • IP address is kept if valid. • Controller generates the appropriate message: a) 'Power ON Soft Reset' b) 'Manual Pushbutton Soft Reset' c) 'Operator Soft Reset'.
	4 short pulses		**Hard Reset:** When JP2 is OFF and JP3 is ON: • All controller's memory is settled to default values. • Internal event buffer is cleared. • IP address is kept if valid. • Controller generates the message, 'Controller Hard Reset'. • Internal RTC (Real Time Clock) and clock are settled to the default time and date values January 1st 2005, 00:00:00, Saturday.
	3 long pulses		**Forced Default Static:** When JP2 is ON and JP3 is OFF: • Same as 'Soft Reset' condition, except IP address is forced to the default static IP: 192.168.1.2.
	Continuous long pulses		**Factory Default DHCP:** When JP2 and JP3 are OFF: • All controller's memory is settled to default values. • Internal event buffer is cleared. • Controller generates the message 'Controller Factory Default Reset'. • The Ethernet port reverts to DHCP configuration and waits for an IP address from the local DHCP server. • Internal RTC and clock are settled to the default time and date values January 1st 2005, 00:00:00, Saturday.

Default initialization

The KT-400 default initialization or **Factory Default DHCP** is done at Kantech. The following steps should only be followed if:

a) You want to configure the KT-400 with the KT-Finder, see page 33.
b) The KT-400 was communicating via the RS-232 port and you have installed a VC-485 or USB-485 to communicate via the RS-485 port.
c) The KT-400 was communicating via a VC-485 or a USB-485 interface and you want to communicate directly with the serial (RS-232) port.
d) You are using a KT-400 from another site and there is no communication.

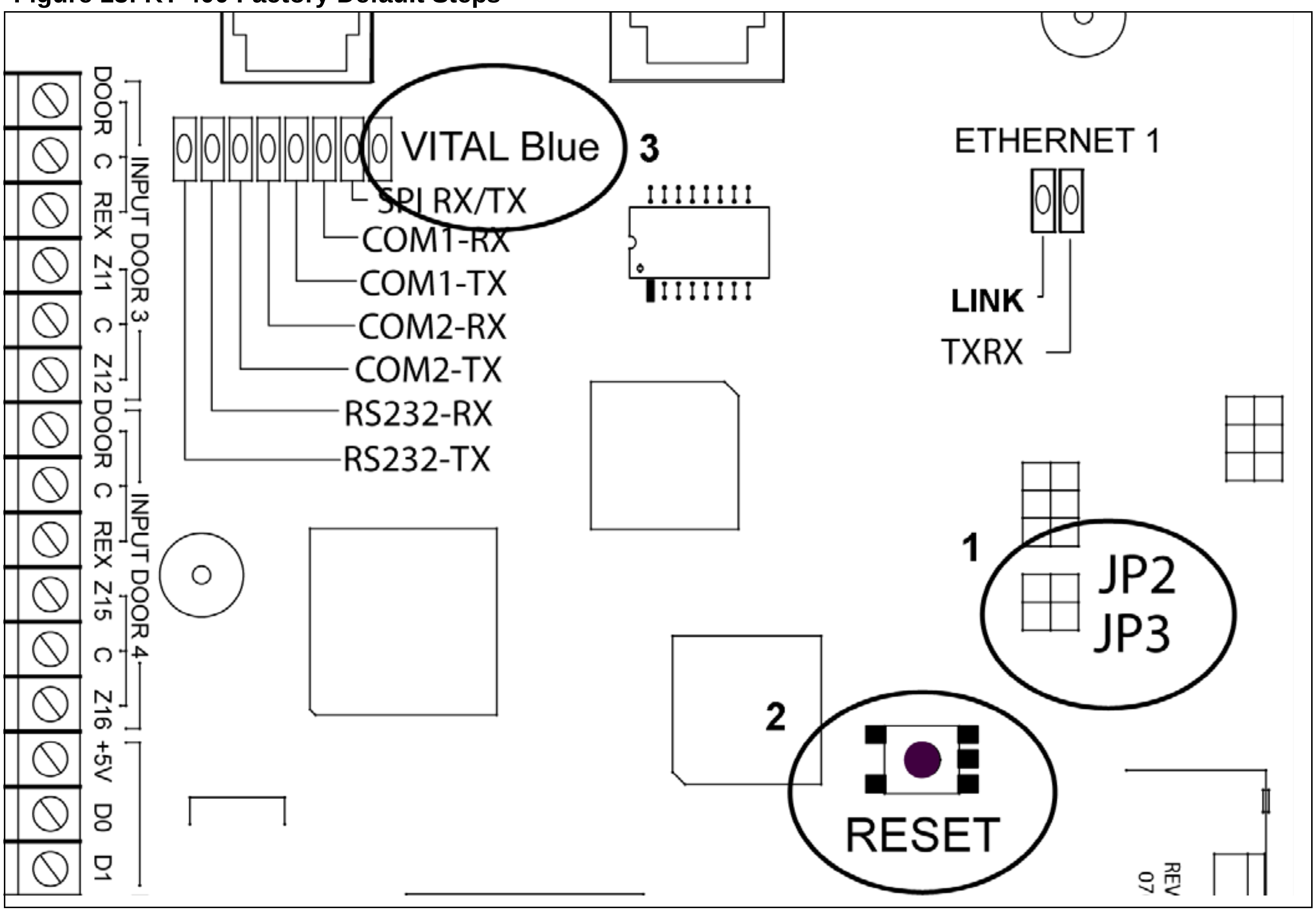
How to reset the KT-400 Ethernet Four-Door Controller for Factory Default DHCP mode

Before you start:

- Locate the reset button, the two jumpers JP2 - JP3 and the blue VITAL LED.
- The Ethernet cable must be connected to the corporate network. The green LINK LED should lit and the yellow TXRX LED should be flashing.
- The blue VITAL LED should be flashing.

1. Remove JP2 and JP3 jumpers as described in Table 3 for **Factory Default DHCP** mode.
2. Press the reset button.
3. Check the blue VITAL LED heartbeat pattern.
4. Verify the IP address with the KT-Finder, see page 33.
5. Put back JP2 and JP3 jumpers.
6. Configure the KT-400 with the KT-Finder, see page 33.

Figure 13: KT-400 Factory Default Steps



KT-400 Ethernet Four-Door Controller Maintenance Recommendations

The KT-400 includes a lithium ion rechargable battery (see the KT-400 Ethernet Four-Door Controller PCB View on page 8). This battery must be replaced by a Kantech technician to avoid any risk of explosion. If the Lithium-Ion battery stops working, return the circuit board to Kantech. Do not crush, puncture, open, disassemble or otherwise mechanically interfere with the battery. Do not try to recharge the battery. If you need to dispose of the circuit board and/or the lithium ion battery, wrap the KT-400 in non-conductive tape. Check with your local authorities for battery disposal regulations.

Warning: Do not store the batteries in such a way that they come into contact with each other or with any piece of metal. Explosion or fire may occur. Should fire occur, use only dry chemical fire extinguishers. Do not use water to put out the fire. Do not heat the batteries. Do not dispose of the batteries or circuit board in a fire. Do not disassemble the batteries. Do not apply pressure to or deform the batteries. Ensure that the above precautions are strictly observed by related departments, including, but not limited to, production, sales and outside contractors.

Regarding the recommended battery 12 VDC / 7 Ah: It is the end-user and/or installer responsibility to assure that the disposal of used batteries is made according to the waste recovery and recycling regulations applicable to the intended market. Use the recommended battery type ONLY.

It is highly recommended to test the KT-400 by performing the following tests:

1) Bi-annual test for battery:

Remove AC power from the controller and let it work on battery power for one hour. This test will ensure that in the event of a power failure, the battery will be able to support normal operations. This test should be performed twice a year. Once the test has been performed successfully, reconnect AC power to the controller.

2) Annual test for emergency lithium ion battery:

Measure voltage of lithium ion battery when power is totally removed from the controller (AC, DC and backup battery power). To ensure maximum operation and to prevent loss of the database, contact your distributor to return the KT-400 for maintenance if the lithium ion battery voltage measures below 2.5 VDC.

Configuring the KT-400 Ethernet Four-Door Controller with the Web Configuration Page

This procedure is practical if you want to configure the KT-400 in advance before going on site.

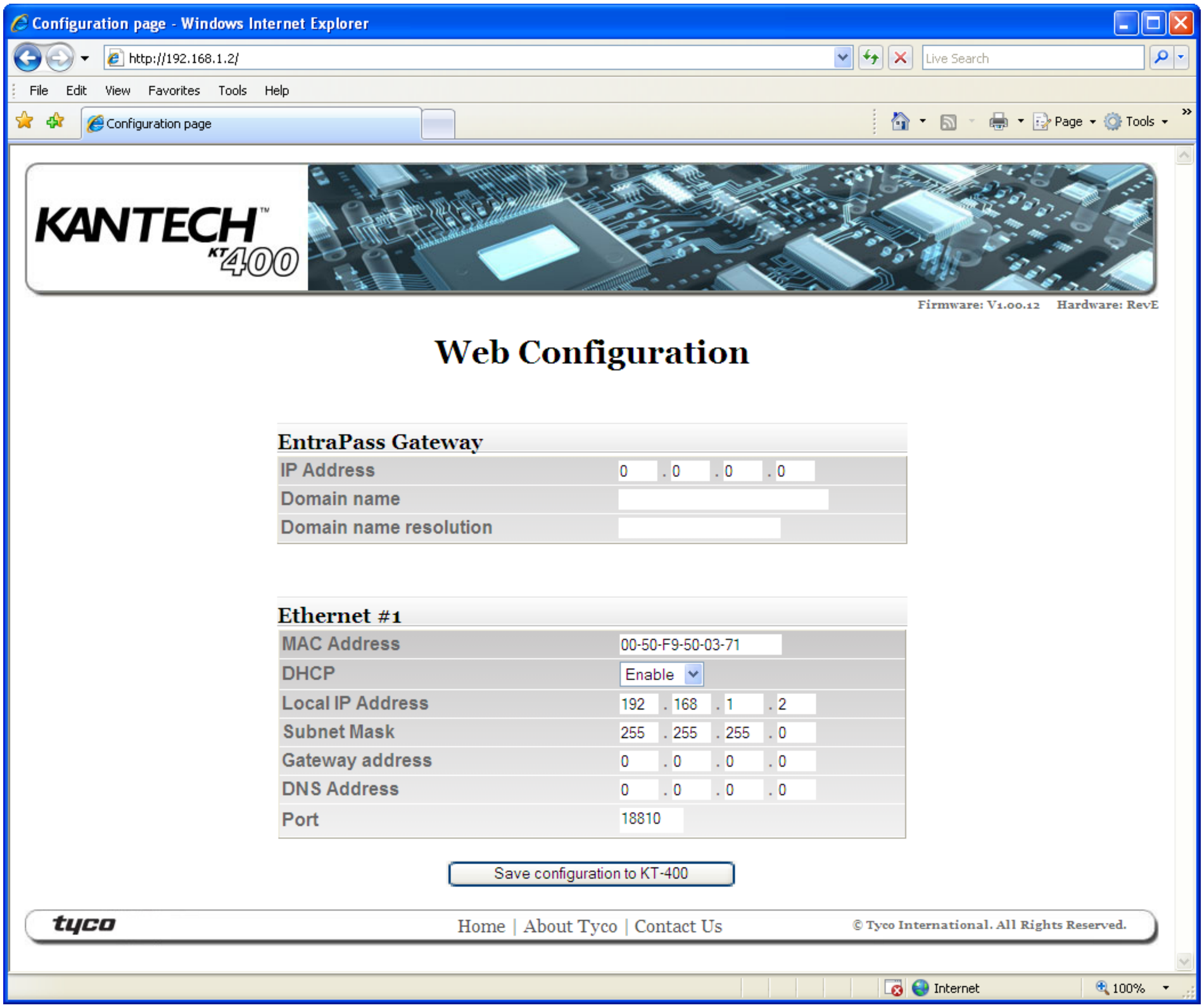
Optional Documentation

Application Note, *Networking Basics*, DN1796.

Before you start

- The detachable *Network Configuration Information Sheet* is fully completed.
- Determine your connection to the KT-400 and choose the appropriate network cable that you need.

1. Make sure the KT-400 is in **Forced Default Static** mode before starting the configuration. Verify the heartbeat patterns to determine the status. See **Table 3 on page 29** for details.
2. Start your web browser and enter the following IP: 192.168.1.2 and press **Enter**.



3. Put a jumper on **JP3**. Both jumpers should now be on **JP2** and **JP3**.
4. Enter the IP addresses as per the *Network Configuration Information Sheet* and click on **Save configuration to KT-400**.
5. When you will go to the site with the configured KT-400, you will have to enter the same details into the EntraPass workstation.

Configuring the KT-400 Ethernet Four-Door Controller with the KT-Finder

The KT-Finder is an application used to configure the KT-400 over the local area network (LAN) or the wide area network (WAN). It doesn't require any installation.

Important: The KT-Finder application is:

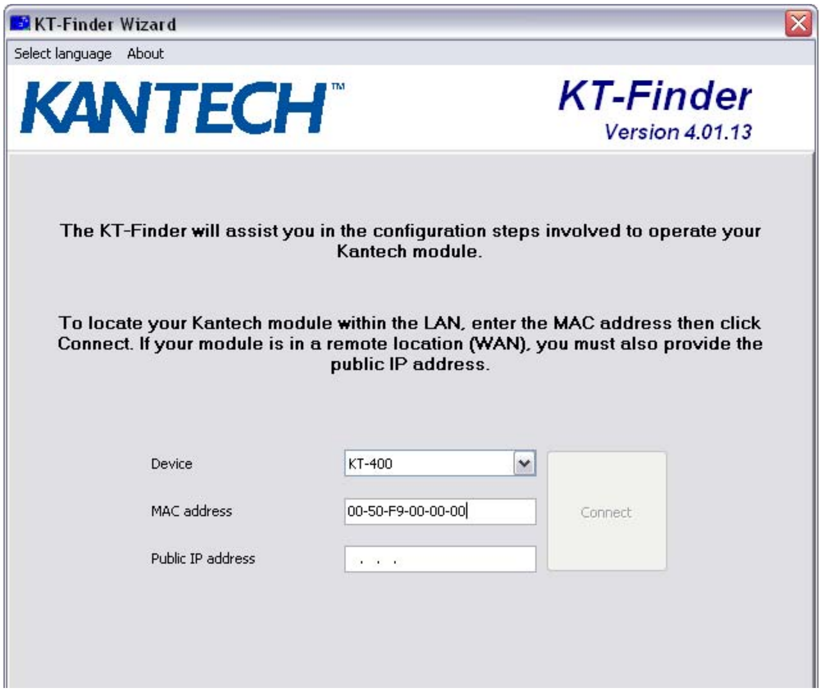
- **C:\Program Files\Kantech\Server_xE\Bin**, or
- on the **EntraPass CD-ROM**, or
- available as a free download from http://www.kantech.com

1. Quit all EntraPass applications.
2. Make sure the KT-400 is in **Factory Default DHCP** mode. See **Table 3 on page 29**.
3. Start the KT-Finder.

Note: If you try to run the KT-Finder while running EntraPass, you will get an error message similar to this.



4. Select **KT-400** from the **Device** menu.
5. Enter the **MAC address** of the KT-400 then click on **Connect**.



6. When the KT-400 is found, the configuration page will be displayed.

Configuring the KT-400 Ethernet Four-Door Controller with the KT-Finder (continued)



7. Put jumpers on **JP2** and **JP3**.
8. Verify your *Network Configuration Information Sheet*:
   - Enter the **EntraPass IP address** or the **Domain name** of the **EntraPass Gateway**. This information must be the same as entered in EntraPass workstation for **Devices > Site**.
   - Select **Obtain an IP address automatically** or **Use the following IP address**. This information must be the same as entered in EntraPass workstation for **Devices > Site**.
9. Change the **Port** number, if required.

   Note: The port number should only be changed when you have more than one KT-400 at the same remote site.
10. Click **OK**.
11. Repeat the procedure for each KT-400 at this site.

KT-400 Ethernet Four-Door Controller

Network Configuration Information Sheet

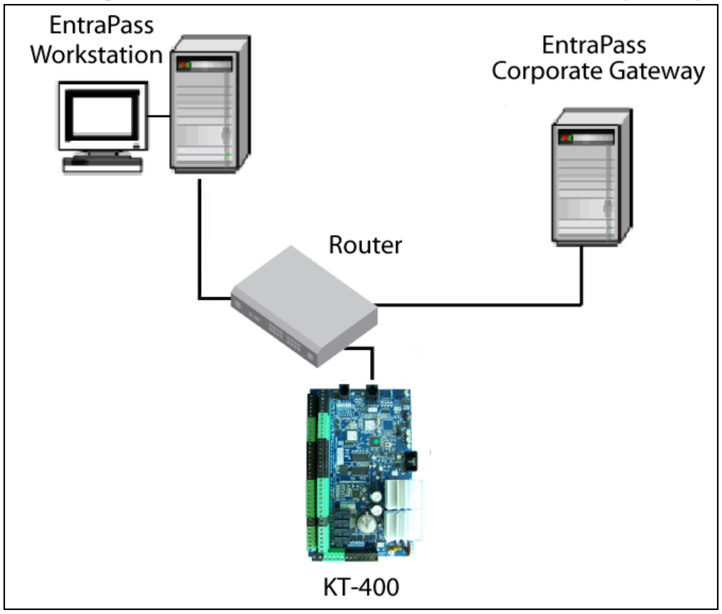
Please complete one sheet per KT-400 Ethernet Four-Door Controller

Company Name:

Site Name:

☐ **LAN or** ☐ **WAN (see other side)**

Configuration in a Local Area Network (LAN)



For more details, refer to the EntraPass Reference Manual.

MAC Address: 00:50:F9: ______:______:______
Port (18810 by Default) or _________

IP Address Type:

☐ DHCP

or

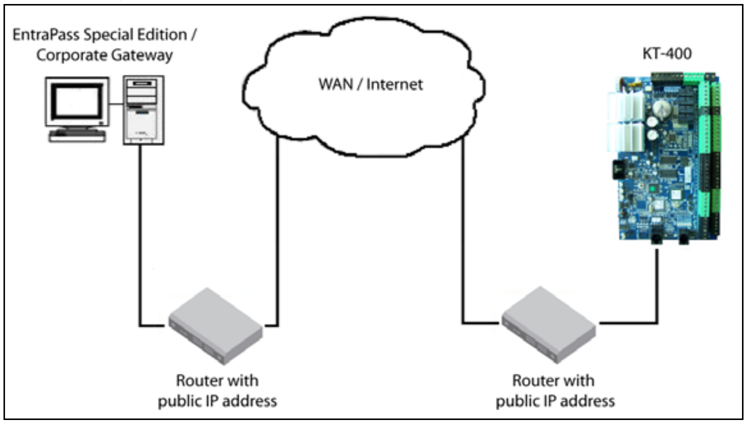
☐ Static

IP Address: ______.______.______.______
Subnet Mask: ______.______.______.______
Default Gateway (Router): ______.______.______.______

EntraPass Special Edition / Corporate Gateway

☐ IP Address: ______.______.______.______

Configuration in a Wide Area Network (WAN)



EntraPass Site

For more details, refer to the EntraPass Reference Manual.

EntraPass Special Edition / Corporate Gateway

IP Address: ______.______.______.______

Router

☐ Public IP Address:______.______.______.______

or

☐ Domain name: ____________________________

Port Forwarding Checklist

For more details, refer to the EntraPass Reference Manual.

EntraPass Gateway Ports: ☐ 18001 (UDP) and ☐ 18801 (UDP)

KT-400 Ethernet Four-Door Controller Site

MAC Address: 00:50:F9: ______:______:______

IP Address Type: ☐ Static or ☐ Reserved DHCP
IP Address: ______.______.______.______
Subnet Mask: ______.______.______.______
Default Gateway (Router): ______.______.______.______
DNS Server IP Address:______.______.______.______

Router

☐ Public IP Address:______.______.______.______

or

☐ Domain name: ____________________________

Port Forwarding Checklist

Note: If you are using more than one KT-400 at the same remote site, you must use a unique port number for each KT-400.

KT-400 Ports: ☐ 18803 (UDP) and ☐ 18810 (UDP) or _________

Installation Checklist

To the Installer: If you are familiar with the installation, you can use the checklist with the ☐ symbol.

Installing the KT-400 Ethernet Four-Door Controller

Preparing to install the KT-400 Ethernet Four-Door Controller

☐ **Required to install KT-400 Ethernet Four-Door Controller**

Physical Installation

☐ **Check for ideal indoor location**
☐ **Stay away from electrical or communication devices**

Earth Grounding

☐ **AWG#18 grounding wire to EGND**

Door Locking Devices

☐ **Connect the door locked device to + and LK1-, (+ and LK2-), (+ and LK3-), or (+ and LK4-)**

- ☐ **When jumper JP4 on INT (internal), the maximum current draw is 1 Amp at 12 to 13.75 VDC, or**
- ☐ **When jumper JP4 on EXT (external), the maximum current draw is 3 Amps at 12 to 28 VDC**

☐ **Check for local “magnetic lock” regulations**

Hooking Up Inputs

☐ **Connect devices to inputs 1 to 16**
☐ **Resistors for all inputs 5.6K ohm (if necessary)**
☐ **Connect readers and keypads**

Auxiliary Outputs

☐ **Connect auxiliary outputs to readers and local warning devices**

Tamper Protection

☐ **Install tamper switch on cabinet**

Connecting the KT-400 Ethernet Four-Door Controller

Connecting the VC-485 or the USB-485 to the RS-485 Bus

☐ **Connect the RS-485 cable to (COM1) +485- and the RS-485 signal ground to the 12 VDC AUX - (negative)**

Connecting the Master Controller to the Host PC

☐ **Connect the RS-232 flat cable from the KT-400 to the PC**

Connecting Expansion Modules to the KT-400 SPI Expansion Port

☐ **Make sure input and output expansion modules are not in the same SPI group**
☐ **Calculate maximum current draw and connect external power supply(ies) to expansion module(s), if required**
☐ **Make sure the power jumper on the modules is in the correct position when using external power supply(ies)**

Powering the KT-400 Ethernet Four-Door Controller (for North America only)

☐ **Install 120 VAC IN / 16 VAC, 75 VA OUT, class 2 transformer**
☐ **Place battery in cabinet**
☐ **Power up the KT-400 Ethernet Four-Door Controller**

Inputs and Outputs Assignments Sheet

Doors					
DOOR 1		CONTACT		REX	
DOOR 2		CONTACT		REX	
DOOR 3		CONTACT		REX	
DOOR 4		CONTACT		REX	
Inputs					
DOOR Z1		NO or NC		EOL, DRY or DEOL	
REX Z2		NO or NC		EOL, DRY or DEOL	
INPUT Z3		NO or NC		EOL, DRY or DEOL	
INPUT Z4		NO or NC		EOL, DRY or DEOL	
DOOR Z5		NO or NC		EOL, DRY or DEOL	
REX Z6		NO or NC		EOL, DRY or DEOL	
INPUT Z7		NO or NC		EOL, DRY or DEOL	
INPUT Z8		NO or NC		EOL, DRY or DEOL	
DOOR Z9		NO or NC		EOL, DRY or DEOL	
REX Z10		NO or NC		EOL, DRY or DEOL	
INPUT Z11		NO or NC		EOL, DRY or DEOL	
INPUT Z12		NO or NC		EOL, DRY or DEOL	
DOOR Z13		NO or NC		EOL, DRY or DEOL	
REX Z14		NO or NC		EOL, DRY or DEOL	
INPUT Z15		NO or NC		EOL, DRY or DEOL	
INPUT Z16		NO or NC		EOL, DRY or DEOL	
Relay Outputs					
RELAY 1		NO		NC	
RELAY 2		NO		NC	
RELAY 3		NO		NC	
RELAY 4		NO		NC	

Figure 14: KT-400 Cabinet Inner Door Sticker Diagram (North America)

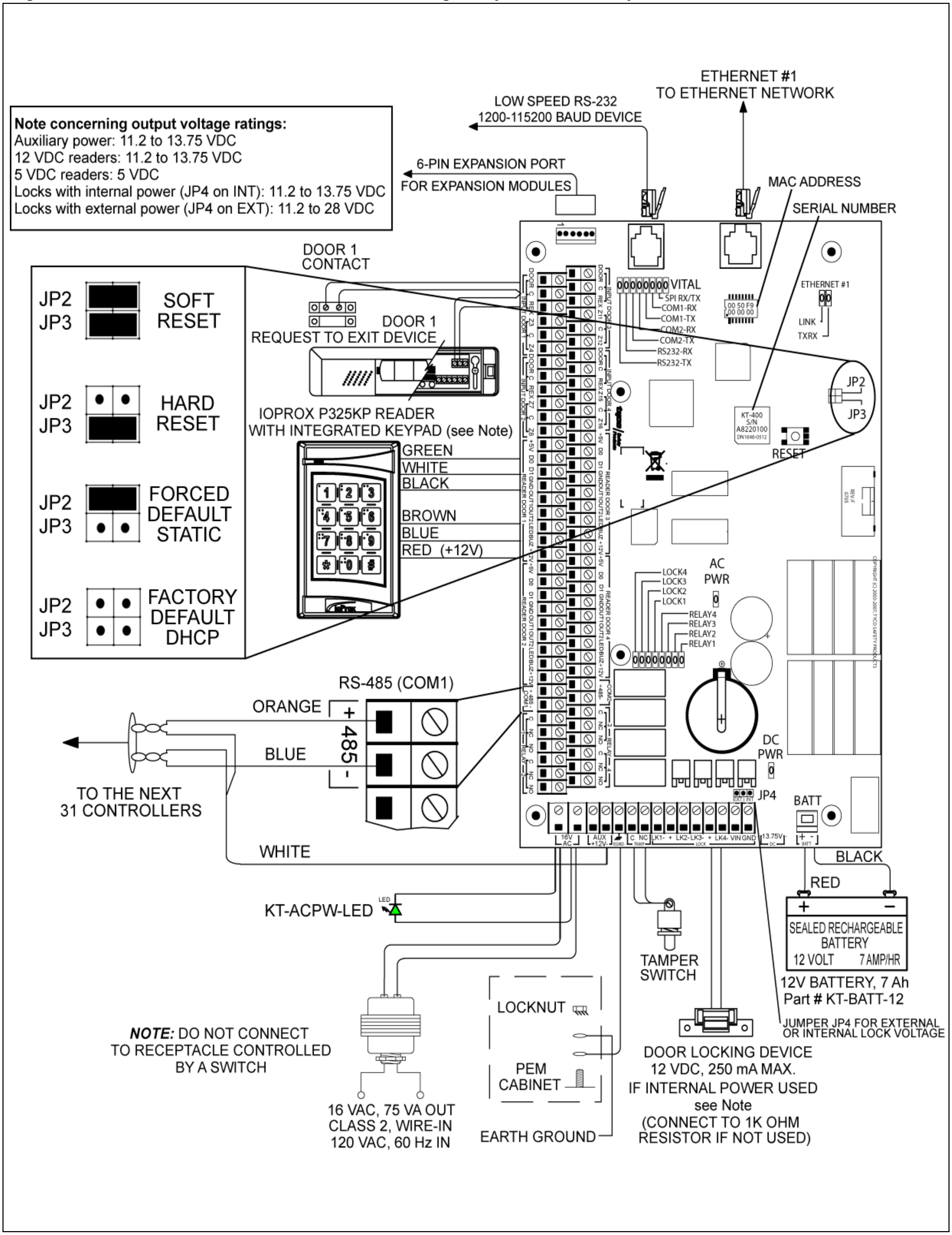


Figure 15